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Railway Age Gazette

SECOND HALF OF 1917—No. 16

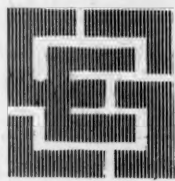
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Railway Age Gazette

Volume 63

October 19, 1917

No. 16

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Many railroads have long since seen the necessity for cutting down on their time tables, but it is apparent that

Economics

in

Time Tables

the economy along this line has not by any means been carried as far as it might be. Railroad time tables and folders are of all sorts and kinds; but they all cost money and much more than they used to cost. There was a time, not so many years ago, that time tables were issued in such quantities that a large proportion of them had to be destroyed at each change of time. That condition has now been remedied on nearly every road, but there is still much waste. Ticket agents, when asked for a time table between two particular points, pass out a complete booklet of almost all the trains on the system, when a very small folder giving only the trains in which the passenger is interested, would suffice. This is, of course, a tremendous waste. The big booklet may cost two cents, five cents, or more, whereas the little folder could be had at the rate of 10 or even 20 for a cent. It is evident, then, that agents should be cautioned not to give away a big booklet when a small folder will do. The president of one large road in the east recently ordered his passenger department to reduce the number of winter time tables by one-half. Another road carrying a very heavy passenger business has carried the step even further. On this road there is now one 96-page folder giving all the passenger trains on the entire system. The various tables are so correlated and arranged that each page or pair of pages is complete in itself. In other words, so made up that the first two tables give all the through trains between X and Y with all information as to car equipment, the second two give all the suburban trains on the Y division in and out of X etc. Thus, pages one and two can be electrotyped, and made up as a complete time table of all the through trains between X and Y or pages three and four as a complete time table of the local trains out of X, etc., and put in a small, cheap leaflet that serves the purpose just as well as the big booklet, is much more convenient and costs only one-tenth or one-twentieth as much. The agents are cautioned to give out the small folders whenever possible and when they order, say, 100 of each the large and small, they are given possibly 175 of the small and only 25 of the large. But, one very important thing is emphasized. The notice to the agents

says: "When it is necessary to give a passenger information it should be given out unhesitatingly. If, however, you know the request is merely one based on curiosity, and the passenger is one whom you know can be fully satisfied with one of the smaller leaflets, try to make the small leaflet do the work." There are many other roads on which this idea could be carried out. It will certainly save a lot of money and paper; and both are hard to get these days. As for the passenger, he usually does not specially desire to be handed an expensive time table just to glance at the time of a single train.

It is the patriotic duty of every person to subscribe for the Second Liberty Loan and to encourage others to do so.

The Liberty Loan Among Railway Employees

A number of the railroads have already made large subscriptions to this cause, and many have brought the loan to the attention of their employees in one way or another. Several roads have also offered to finance the purchasing of these bonds for their employees, allowing them to pay for them in instalments. The engineer in charge of track elevation on the Chicago, Rock Island & Pacific, at Chicago, has gone a step further in bringing this loan to the attention of his employees. About 500 men are now employed on this work, including hoboos, Italians, Greeks, Austrians and other nationalities. A few days ago he arranged for four Liberty Loan solicitors and a speaker to accompany him on a trip over this work; each gang was visited on the job, and the general plan was outlined to the men directly and through interpreters where necessary. Following this the men were gathered together in a large meeting at the noon hour and the matter was presented to them again. They were told in simple language what the purpose of the loan was, its security and its other advantages. They were also advised that the company would make arrangements with a bank to carry these bonds on an instalment plan until they were able to complete payments for them. The result was not only an exceedingly enthusiastic meeting, but over 100 men subscribed at that time or over 25 per cent of those present. In one foreign gang over 30 per cent of the men subscribed. Other subscriptions are still being received, so that it is expected that one out of every three men among these laborers will have taken a bond.

Some of the men paid as much as \$50 in cash. An interesting development was the fact that a considerable number of subscriptions were received from Austrians. If results such as these can be secured among employees commonly regarded as least susceptible to appeals of this character, the possibilities of extending such a campaign among all classes of employees can scarcely be estimated. The incident offers a suggestion as to means of bringing the loan to the attention of other employees. A similar procedure was successfully used on many roads for the first Liberty Loan.

It is hard to break confirmed habits. Getting out of a well worn rut is no simple task, and yet the conditions under

Stop Unproductive Work

which the railroads are laboring are so abnormal and the stress is so great that it would seem that there could be no question as to the realities of the war conditions and the fact that all unessential and unproductive work should be pushed to one side and forgotten until after the struggle is over. There is a severe shortage of labor and the railroads have lost many men from supervisory and official positions. The shortage is so great that it is absolutely necessary to decide upon those parts of the work that can be cut down or overlooked for the time being without affecting the more essential work. It seems out of place, for instance, to find a large committee of capable car interchange inspectors touring the country to discover abuses of the M. C. B. rules and spending months in investigating minute details. Such a committee is bound to find many mistakes at this time but it is doubtful if its efforts can remedy the situation to any great extent. The roads are struggling along with the car maintenance problem as best they can with a large amount of green help and many foremen and inspectors who have recently been promoted from the ranks and have had very little coaching or training in their new positions. This is particularly true in industrial centers where the extremely high wages paid have drawn many men away from the railroads. The seriousness of the labor situation is indicated by the fact that men who have served for many years on roads with pension systems and relief funds are leaving the service and surrendering all their rights. It would seem that the members of a committee such as that mentioned above could put in their time to far better advantage by giving intensive service on their own roads in helping to supervise and direct the efforts of those foremen who are not thoroughly acquainted with their new work and also to the education of the green men. Never was there greater need of intensive educational work among railway employees, and this situation is further complicated by the fact that women are daily being employed in larger and larger numbers in all departments.

ENORMOUS INCREASE IN FREIGHT TRAFFIC

IN the month of July the railways of the United States handled 48 per cent more freight traffic than in July, 1915, and 49 per cent more than in July, 1914. The Railroads' War Board has just issued statistics showing that the ton mileage of freight handled in July, 1917, was 20.2 per cent more than it was in the same month of 1916. This increase in the traffic handled reflects a remarkable performance in view of the fact that the traffic of 1916 far surpassed all records up to that time. Because 1916 was a record year it is necessary to compare the results being obtained now with those of years prior to 1916 in order to realize fully the magnitude of the achievements of the railways in handling the present volume of business as well as they are. The increase in freight traffic in July, 1917, over July, 1915, exceeded the annual freight business of the railways of Japan, Spain, Sweden, New South Wales, Switzerland and Brazil combined.

It should be borne in mind that there has been almost no

increase in railway facilities within the last two years. There was an actual decrease in the number of locomotives and freight cars in service on June 30, 1916, as compared with the number in service on June 30, 1915. The number of locomotives and freight cars has increased within the last year, but the number now in service certainly is not more than 1½ per cent more than it was two years ago. In other words, the roads are handling 50 per cent more traffic than they were two years ago with perhaps 1½ per cent more locomotives and cars. Of course, business was comparatively dull at this time two years ago. There were 265,000 surplus freight cars on August 1, 1915; on the other hand, there is a car shortage now; but there would be a vastly larger number of unfilled requisitions for freight cars if there had not been within the last two years an enormous increase in the efficiency with which railway equipment is operated.

We note that the coal mine operators of the country have a friend in official life at Washington. The United States Geological Survey has issued a statement to the press dated October 11, which bears the caption, "Coal Mines Doing Their Bit," "Daily Output of Coal Breaks All Records to Meet This Year's Demands," "1917 Tonnage Promises to Exceed 1915 Records by 25 Per Cent." If the coal mines are "doing their bit" by increasing their output 25 per cent as compared with 1915, what may be said for the railways which are handling 50 per cent more traffic than in 1915? The record being made by the mines is fine, and deserves all the commendation which can be bestowed upon it. We could wish, however, that there was some government department which would show as much pride regarding what the railways are doing as the Geological Survey very properly shows regarding what the mines are doing, for the achievement of the railways is relatively greater than that of the mines.

OFFICIAL MISREPRESENTATION OF THE RAILWAYS

MAX THELEN, who is president of the California Railroad Commission and also president of the National Association of Railway Commissioners, is an able, intelligent and public-spirited man. He is one of the most capable men included in the membership of the state railway commissions. In his recent address as president of the National Association of Railway Commissioners he patriotically urged upon the state commissions the duty of co-operating in every way they can with the railways and other public utilities in order to enable these concerns to operate with the utmost efficiency and thereby contribute their share toward the winning of the war. Since the *Railway Age Gazette* has so high an opinion of Mr. Thelen, and since his address was admirable in many respects, it is with regret that we feel obliged to call attention to a number of indefensible misrepresentations of the railways to which he gave the support of his name and position.

In one place he refers to the action of the railways in deciding, as he says, "to operate as a single consolidated American system and in doing so to eliminate a portion of the waste and inefficiency which were pointed out by the Interstate Commerce Commission in the five per cent rate case and which for years have been recognized and commented upon by state railroad commissioners and other students of railway problems." We should like to have Mr. Thelen tell us where in its opinion in the five per cent advance rate case the Interstate Commerce Commission pointed out the "waste and inefficiency" to which he alludes, and then show us what relationship there is between what the Commission said and what the railways are now doing and attempting to do. The Commission cited many ways in which the railways could increase their revenues by making special charges for special services, but we have sought in vain for a single word in its opinion which pointed out such "waste and inefficiency" as

Mr. Thelen refers to. We boldly assert that there is no such word in it.

In another place Mr. Thelen says, "While the carriers were at first largely in favor of the valuation, they seem now to be generally opposed to the ascertainment of the facts by the Federal Government." The *Railway Age Gazette* has observed the development of the valuation propaganda from its inception, and it does not know of a single railway corporation or railway officer who ever favored "the valuation," by which Mr. Thelen must mean the one provided for by Congress and now being made by the Interstate Commerce Commission. On the contrary, the railways always have opposed valuation on the ground that it does not afford a sound basis for the regulation of rates. They acquiesced in the legislation fathered by that great friend of the Prussians, Senator LaFollette, because they believed that valuation would show that the railways as a whole were not over-capitalized and that therefore, while it would cost a lot of money, it would not do any other harm; but they never "favored" this legislation. Why, then, does Mr. Thelen allege that the railways formerly favored the valuation but are now opposed to its continuance? We challenge his statement as being without foundation and offer our columns to him in which to substantiate it.

In another place Mr. Thelen criticizes the railways upon the ground that duplications of their facilities, their service, and in consequence, of their operating expenses, has resulted in waste. We ask him if it is not a fact that the entire policy of our legislation in the United States has been to cause unrestricted competition between railways and the duplication of facilities of service and of operating expenses which is necessarily incidental to such competition. If, as we contend, these duplications have been not only encouraged, but actually compelled, by law, then does Mr. Thelen think he is justified in referring to them in such a way as to imply that the management of the railways are entirely responsible for them? The *Railway Age Gazette* was engaged in pointing out the duplications of service to which Mr. Thelen refers long before he ever discovered that they existed. Since, however, as Mr. Thelen must have known if the railway managers had got together and agreed to eliminate them they would have been put in jail for violating the Sherman law, we contended that the government as well as the railway managements was responsible for them. Doesn't Mr. Thelen also think that the government had and has some responsibility for them? If so, why doesn't he say so? Doesn't he know that the railways would not have been permitted before the war to have adopted the measures they recently have adopted for the elimination of competition and of the waste to which it leads? If so, why doesn't he say so?

And, speaking of duplications of service and expense, doesn't it occur to Mr. Thelen that there may also be some waste in the duplication resulting from regulation being carried on by Congress, by the Interstate Commerce Commission and by the legislatures and commissions of 48 states? We should like to see the duplications of service and expense in railway operation eliminated. We should also like to see the duplications of service and expense in railway regulation eliminated. Since we agree with Mr. Thelen on the former point, will he agree with us on the latter point?

Mr. Thelen says that "what the railroads are now doing is being patriotically done and deserves and is receiving the unstinted praise and commendation of all American citizens." Then he adds, "The other conditions to which I have referred must be remedied if our transportation system * * * is to measure up to the standard of national efficiency which the people of the United States will imperatively demand after the war." Perhaps Mr. Thelen can think of some other industry in the United States which is managed with greater relative efficiency than the railroads, and will tell us why he thinks it is better managed. Perhaps, also, he has in mind

some other railway system in the world which he thinks is better managed than ours, and will tell us why he thinks it is better managed. We long to be enlightened.

The railway system of the United States has, of course, at times been diseased in some of its members. Taken as a whole, however, it is the most efficient and vigorous business enterprise in the country. Unfortunately, most of our regulating authorities are not interested in the physiology of the railway business, but concern themselves solely with its pathology.

SOUTHERN RAILWAY

THE increased cost of fuel and the increase of trainmen's wages due to the enforcement of the so-called eight-hour law, in the last half of the fiscal year ended June 30, 1917, kept the Southern Railway's showing in the fiscal year from being as good as it otherwise would have been; but despite these increased expenses the year was a very prosperous one for the company. President Harrison, in his annual report, naturally and properly lays great stress on the rapidity and extent of the commercial, industrial and agricultural growth of the southeastern states. At last that ideal for which Mr. Harrison and his predecessor—the late Mr. Finley—worked so hard is being attained. The South is raising sufficient foodstuffs and livestock for its own needs. Add to this the fact that in the current year government estimates place cotton production at 6,357,000 bales, or 19.35 per cent higher than a year ago, and one realizes the foundation on which President Harrison's enthusiasm rests.

The Southern Railway earned \$81,388,000 in the year ended June 30, 1917, an increase of 14.46 per cent over the previous year. This is on an average of \$11,655 per mile, comparing with \$9,967 earned per mile in 1916. It was only 16 years ago that the Southern Railway was earning a little over \$5,000 per mile gross. Of the total operating revenues of \$81,388,000 in 1917, \$54,864,000 was from freight service and \$23,708,000 from passenger train service, the remainder being other transportation revenue, and incidental revenue. The increase in freight revenue, which amounted to \$6,672,000, was due to a greater movement of nearly all classes of commodities. The greatest increase was in the tonnage carried of manufactures and miscellaneous. The revenue from this tonnage amounted to \$16,202,000, or an increase over 1916 of 24.91 per cent. Products of agriculture yielded \$9,662,000 freight revenue, an increase over the previous year of 8.37 per cent, and products of mines yielded \$9,545,000 freight revenue, an increase of 12.91 per cent.

To offset the increased wage scales and fuel costs the principal gain in freight service in operating economies was through better carloading. The average load per loaded car in 1916 was 19.85 tons, and in 1917, 21.05 tons, an increase of 6.05 per cent. There was a small gain in trainloading, the average trainload of revenue freight being 373 tons in 1917, as against 365 tons in 1916, an increase of 2.36 per cent.

Unlike many other roads, the Southern Railway was not helped materially in making a better trainload showing by having a better balanced traffic. The loaded freight car mileage increased 6.34 per cent, and the empty freight car mileage 6.24 per cent. The total number of cars per train was 30.02 in 1917 and 31.54 in 1916. In other words, the heavier trainload was accounted for by better carloading. The total cost of transportation (the out of pocket cost of moving freight and passenger business) was \$3,815,000 in 1917, an increase over 1916 of 16.64 per cent. In the last half of the fiscal year (January to June, 1917) transportation expenses amounted to \$14,415,000 as compared with \$12,334,000 in the previous year. It was estimated that the effect of the eight-hour law and the advanced cost of coal

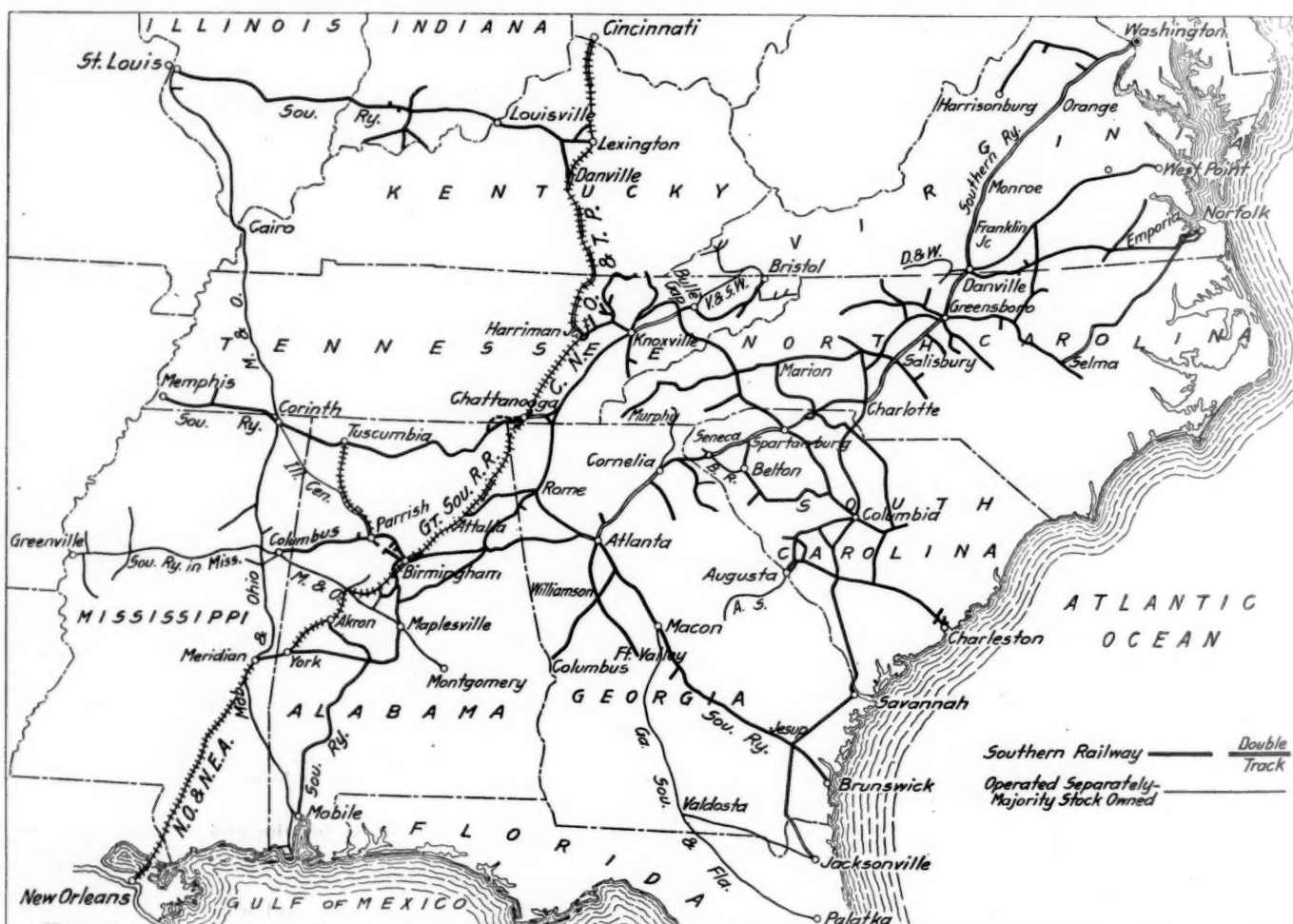
alone increased transportation expenses in these six months by \$1,394,000.

In passenger service the management was able to effect very considerable economies and, moreover, there were more than 17,000,000 passengers carried without the loss of a passenger's life in a train accident. The total number of passengers carried one mile was 888,805,000, an increase of 14 per cent. The average passenger journey was 50 miles in 1917, as against 46 miles in 1916, and the receipts per passenger per mile were 2.145 cents in 1917 and 2.124 cents in 1916. With the increase of over 14 per cent in passenger mileage there was an increase of only 2.96 per cent in passenger-train mileage, and the average number of passengers per train was increased from 47.56 in 1916, to 52.90 in 1917.

The Southern Railway has applied the formula prescribed

betterments expenditures were \$1,053,000 for grading, \$1,839,000 for bridges, \$731,000 for rails and \$617,000 for other track material. Additions to equipment cost \$5,898,000 in 1917. Despite the shortage of labor the Southern Railway is keeping its freight cars in very good shape and the percentage of bad order cars to all freight cars on July 1, 1917, was only 2.32 per cent. This is a quite remarkably low percentage of bad order cars. The Southern has placed contracts for new equipment, including 25 Santa Fe, 12 Mallet and 8 Mountain type locomotives, and for 1,400 box cars and 1,313 gondola cars.

President Harrison makes two particularly interesting comments on the results of the year's operation. In speaking of additions and betterments he says: "The success of the company in handling, during the past year, a record traffic easily and without congestion, so building up its in-



The Southern Railway

by the Interstate Commerce Commission for the division of expenses and taxes between freight and passenger service. In passenger service the direct and assigned revenues per passenger-mile averaged 2.764 cents, and the costs assigned to passenger service, to 2.216 cents, leaving an operating income applicable to interest charges, etc., of 5.48 mills per passenger-mile.

In freight service revenues are estimated at 9.44 mills per ton per mile and expenses at 6.20 mills per ton per mile, leaving operating income of 3.24 mills per ton per mile.

Considerably larger amounts were spent for maintenance in 1917 than in 1916. Maintenance of way and structures cost \$10,138,000, an increase over 1916 of \$1,963,000. Maintenance of equipment cost \$12,372,000, an increase over 1916 of \$1,188,000. Besides the amount spent for maintenance, there was \$8,571,000 spent for additions and betterments to roadway. The larger items in the additions and

come balance, may fairly be attributed to the liberal policy of enlarging the plant which has been followed during the past year." And in speaking of the service of employees he says: "Despite disturbed labor conditions throughout the year and acute discussions of wages, the company has again had loyal and efficient service from its army of officers and employees. The management cordially acknowledges that whatever success has been secured is due to that co-operation and to the vigor with which work is done under the stimulus of the now established and recognized pride of the rank and file in their relation to the property." This is not the ordinary somewhat perfunctory acknowledgment of the thanks of the directors to employees and officers but has a ring of heartiness about it that carries conviction. Mr. Harrison, himself chairman of the Railroads' War Board, at Washington, has presumably had to devote a very considerable portion of his time to the work of this board in

its supervision over the operation of all the railroads of the country. It is a tremendous responsibility, and the fact that Mr. Harrison had built up an organization on the Southern Railway which could carry on the management of the Southern Railway in a year of unprecedented pressure of traffic, labor shortage, high prices of materials and increased labor costs as economically as was done in the fiscal year ended June 30, 1917, is a high tribute to his executive ability.

Since the close of the fiscal year the Southern Railway has resumed dividend payments on its preferred stock through the declaration of a semi-annual dividend of $2\frac{1}{2}$ per cent, payable November 20. There are two ways, of course, of looking at this question of the resumption of dividends. With a surplus, after paying interest charges, of \$12,360,000, the declaration of a semi-annual dividend on the preferred stock, calling for \$1,500,000 only, is conservative, and to the holder of Southern Railway preferred stock who is dependent on his or her income from investments for a living the resumption of dividends seems only fair. On the other hand, railroad credit is in such a state as to make long time financing by a road like the Southern Railway extremely difficult, if not impossible.

A comprehensive scheme of financing had been worked out by which a new refunding and improvement mortgage was to be the security for bonds which were to take the place of the development and general mortgage 4's which had hitherto been used for financing the needs of the property, but conditions were such that these bonds could not be sold at a satisfactory price. Instead an issue of \$25,000,000 two-year 5 per cent notes were sold, due March 2, 1919. It might be argued that with money as difficult to obtain for additions and betterments on railroads as it now is, the Southern Railway had better conserve to itself the \$3,000,000 a year which would be called for by 5 per cent dividends on the preferred and invest it in additions and betterments rather than to pay it out to stockholders. Presumably the board of directors felt that the company's credit could be more effectively strengthened by the resumption of dividends on the preferred than by investment in the property of \$3,000,000 additional in the next year. At the end of the year there were \$7,553,000 cash on hand, \$1,964,000 time deposits and \$3,079,000 special deposits. There were only \$455,000 loans and bills payable and \$182,000 of unextinguished discount on funded debt. There was \$845,000 discount on securities charged off during the year through profit and loss account and \$611,000 "net difference between the book value and selling price of securities sold" charged off.

Mention should be made of the acquisition of almost the entire stock of the New Orleans & Northeastern, by the Southern Railway. At the same time the Southern Railway disposed of all interest in the Alabama & Vicksburg and the Vicksburg, Shreveport & Pacific. As will be seen from the map, the acquisition of the New Orleans & Northeastern gives the Southern Railway an entrance into New Orleans and forms a through north and south line in connection with other allied lines of the Southern of great traffic importance.

The following table shows the principal figures for operation in the fiscal year ended June 30, 1917, compared with the fiscal year ended June 30, 1916:

	1917	1916
Average mileage operated.....	6,983	7,023
Freight revenue.....	\$54,863,694	\$47,020,482
Passenger revenue.....	19,061,964	16,615,857
Total operating revenue.....	81,388,325	69,997,675
Maintenance of way and structures.....	10,138,386	8,175,411
Maintenance of equipment.....	12,372,057	11,183,701
Traffic expenses.....	2,039,638	1,904,129
Transportation expenses.....	26,748,928	22,751,698
General expenses.....	2,199,449	2,038,702
Total operating expenses.....	53,630,136	46,041,116
Taxes.....	3,394,424	2,916,427
Operating income.....	24,331,453	21,004,005
Gross income.....	27,452,748	24,426,031
Net income.....	12,360,161	9,333,899
Reserve for preferred dividend.....	1,500,000	.....
Appropriations for additions and betterments.....	181,402	88,195
Surplus.....	10,678,759	9,245,704

Letters to the Editor

THE VITAL OBJECTION TO UPPER BERTHS

NEW YORK, N. Y.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have read with interest the communication signed by "Traveler" in the August 31 issue of *Railway Age Gazette*, and it seems to me he has diagnosed the upper berth complaint very well indeed. The Pullman Company is to be congratulated upon the splendid progress made in recent years; but much remains to be desired.

Theoretically, the upper berth is the more desirable of the two; the springs are better, the air is purer and the climb up, while inconvenient, is not a vital objection with the average individual.

More provision for care of clothing and a window such as suggested would be desirable and would help to make the upper berths more acceptable; but to me, and to the very large number of men with whom I have discussed this question, the greatest single objection to an upper berth is that of light. There appears to be no adequate regulation covering this matter and in traveling over many different railroad systems I have found many different manners of handling this question. Some porters and conductors have been willing to shut lights off at 10:30, while others insisted upon retaining them at full blast until, and sometimes even after, midnight. There is the same divergence of attitude in the morning, as in some instances lights are turned on as early as half past four or five o'clock at the whim of a porter, while there are also happy occasions where one is allowed to enjoy the semi-darkness of an upper berth until half past six or seven o'clock, although such instances are about as rare as the proverbial hen's teeth, or an oasis in a desert.

In their natural desire to reduce the number of Pullmans necessary to properly care for a contented public, would it not be possible for the Pullman Company, pending the discovery of some method of keeping the car lighted without inconveniencing upper berth patrons, to establish a rule that all lights save berth lights shall be extinguished at not later than ten thirty at night and shall not be lighted before six thirty in the morning? Surely it is no more of a hardship for the occupant of a lower berth to retire by the two berth lights that are his than it is for the unfortunate holder of an upper berth to lie restless in the glare of heavy lights until eleven, eleven thirty or twelve o'clock, when the man downstairs gets tired of reading and is willing to allow the porter to turn off the annoying glare.

Any method of operation that leaves to the discretion of conductors and porters the adjustment of a matter that provokes so much unfavorable comment must be faulty. It seems to me that only a fixed ruling which bears in mind the need of the man in the upper berth for a fair chance to sleep can cover it.

I write from an experience of more than 25 years in Pullman travel and during this quarter of a century I have heard scores of men reluctantly taking upper berths protest against the inconvenience in undressing, but more than all against the inability to get lights turned off at a reasonable hour and the inability to keep them from being turned on at an unreasonable hour in the morning. In other words, is it not fair to the upper berth man to assume that after ten thirty a sleeping car should be what its name suggests, and not a social lounge or a comfortable well-lighted reading room?

A PULLMAN FRIEND.

The Pressing Need of Prompt Co-operation*

Appeal to State Railroad Commissioners to Take Broad Views; States Should Co-operate in Railway Valuation

By Samuel Rea

President of the Pennsylvania Railroad

IN these times of great events, when history is being made daily, it is necessary for Nations, as well as individuals, to become accustomed to changed conditions and adapt themselves to new methods. Now, more than ever before, all political rights and powers existing within this country, must be exercised with the one primary purpose of protecting and defending our national sovereignty.

The Railroads' War Board, on which I have the honor to serve, exists as the creature of our national purpose. Its fundamental object is to unite the railways upon the great work of doing all that is within their power to aid the government in winning the war. It considers and deals with the railroads as a whole, from a national point of view, and is endeavoring to manage them in the best practicable way for the collective welfare of the country. Yet, everything we do is in full recognition of the constitutional and sovereign rights of the states and of their various peoples. These rights are not annulled or suspended by the war, but I wish to speak briefly concerning a few of the ways in which we feel that the regulative bodies of the various states can co-operate with the national regulative power, not only during the continuance of the war, but also to make permanently the railroads the most efficient servants of the public in the times of peace which are to come.

With a degree of co-operation on the part of the general public, which can scarcely be too highly praised, we of the War Board, are making very material progress toward obtaining the maximum service out of the transportation plant of the country. We are expediting traffic; carrying more tons to a car and to a train; moving freight cars and engines more miles per day; eliminating unnecessary train service; consolidating passenger trains; securing prompter unloading, and in many ways releasing men, trackage and equipment to care for the movement of troops, military supplies, food, fuel and other necessities. We are making priority shipments under mandate of the federal law. By our own agreement, we are moving empty cars about the country so as to put them promptly where they are most urgently needed, and are arranging the routing of traffic according to the best physical conditions, and without reference to benefiting individual roads. Other examples of subordination of the competitive activities of individual railroads to the general welfare, are: the efforts made in expediting coal shipments; in furnishing material for the cantonments; in providing additional facilities for new shipyards, industries and mines; in handling the movement of more than 700,000 troops to camp and to seaports for transportation abroad, and in other ways.

All of this means forcing of traffic out of its normal channels, foregoing profitable business and making great financial sacrifices at a time when it is extraordinarily difficult to conserve railroad revenues. We are face to face with an absolutely unprecedented scale of prices for all materials; wages are higher than ever known before; labor is difficult to obtain at any price, and much of it is incredibly inefficient; we are practically unable to obtain new locomotives, as France has the first call on the American supply, and similar conditions exist in the case of steel rails and many

other materials. We are daily made to feel more keenly the competition of industries in the labor market, because they are able to pay wages which the railroads cannot afford. Many of our best men volunteered in the military service months ago, and thousands more have just been taken in the draft. Nevertheless, the railroads have disregarded all of these factors which make operation difficult beyond precedent; they have put profits in the second place and national service in the first place.

My conception of public regulation of railroads is that expressed by that great railroad statesman, Alexander J. Cassatt, who died in office eleven years ago, when president of the Pennsylvania Railroad: that the railroads are, in the nature of things, partial monopolies, and that, therefore, in the public interest, their rates, practices and activities must be placed under governmental regulation; that this regulation must be protective not only of the communities, passengers and shippers which the railroads serve, but also equally of the owners and administrators of these great national properties which are now publicly owned, not by the government, but through a far higher type of public ownership, viz., by hundreds of thousands of individual citizens and the institutions in which they have their funds invested. You, the members of the state railroad commissions, form an important part of this great regulatory power which reaches all over the country. To the extent that you co-operate with the federal government in its supreme power of regulating interstate carriers, you are sharing in promoting the common defence and the general welfare. To the extent that you fail so to co-operate, even though you may appear to be benefiting certain citizens of your own state, you not only weaken the railroads, impair their service and destroy their credit, but also menace the national authority, conflict with its policy, and weaken the effective commercial and military power of the country.

It is to point out this situation and plead that your attitude may always be one of co-operation that I am here tonight. I appreciate what many of you have already done in helping us, on the Railroads' War Board, to do our work properly, and to make successful our efforts to aid the nation. May I suggest some other avenues in which state commissions may co-operate still further?

ABOLISH USELESS REPORTS

Let me first ask that you aid us by consenting to the abolition of all reports, documents and accounting requirements of all kinds which are not absolutely necessary to enable you to do your work. Opportunities for simplification are almost innumerable. Public regulation of the railroads, thus far, has simply added bureau upon bureau and authority upon authority, which have caused to be amassed uncounted and uncountable figures in millions of printed pages of reports, forming an undigested and useless mass.

When you go home, test the necessity of your various reports by cutting some of them out for a time—say for the continuance of the war,—and in that way ascertain whether or not they have real value. The railway accounting officers have asked you for certain relief from the excessive burdens; we need this relief most urgently, because of the many men who have been called to the colors from our accounting departments. It is a source of much gratification

*An address before the members of the National Association of Railroad Commissioners at a banquet at the New Willard Hotel, Washington, D. C., October 17.

that the federal and state commissions have accepted the calendar year, instead of the fiscal year of June 30, for annual reports and that the accounting classifications are now almost identical. But the field is a big one, and much further saving may be achieved.

THREE MILLION REPORTS IN A SINGLE YEAR

For the year ending June 30, 1915, I think the report prepared for the Newlands committee showed that, including duplicates made for the various federal and state authorities, almost 3,000,000 official reports were furnished by the railroads of this country. They consisted of annual and quarterly reports, tax reports, accident reports, equipment and other special reports. The Pennsylvania Railroad system alone furnished over 400,000. Let us cut these to the bone, and build up later if it is found that any which are eliminated are missed. This is the only way to get prompt relief, and promptness in this matter is most urgently essential.

113,965,747 PAGES OF PRINTED TARIFFS FILED AS A FORMALITY

The question whether or not the railroads needed a 5 per cent increase of freight rates, was necessarily a general one; but before the case could even be heard we had to file separate tariffs for every rate affected. The Pennsylvania Railroad system, which was merely one of the carriers involved, was obliged to spend, it is safe to say, \$450,000 for the tariffs which it was required to file, and our Lines West of Pittsburgh alone filed tariffs which made up the enormous and incomprehensible total of 113,965,747 pages, weighing a total of 302,883 pounds. Of course, there was no thought in the mind of anyone as to the possibility of reading or even casually examining all these tariffs, but it was necessary to print and file them because that was the procedure then in force.

Fortunately, since that time we have made some headway in bringing about a recognition of the needlessness of wasting so much time, effort and money in a formality. In the most recent rate case, which was begun last spring, the Interstate Commerce Commission suspended its rules of procedure and allowed the application for a flat advance to be made without the necessity for filing tariffs covering all the many thousands of rates involved.

STATE COMMISSIONERS SHOULD ATTEND I. C. C. HEARINGS

Co-operation by the state commissions with the federal government, in the matter of readjusting railroad rates to a reasonable basis, is a great field for assistance in stabilizing railroad credit, and removing conflicts between interstate and intrastate rates. It ought not to be necessary to spend weeks or months in painfully working out some rate adjustment with the Interstate Commerce Commission and then have to do the same thing with the state commissions in all states affected by the proposed changes. Nor should the spectacle be witnessed of a state virtually setting aside the superior authority of the federal government. I hope to see the time come when state commissions will regularly send their representatives to sit with the Interstate Commerce Commission during its hearings, for the specific and definite purpose of co-ordinating the action of the state commissions to what the federal commission may decide. I think in such cases the state commissions should be willing, without the necessity of a rehearing, to accept the proof heard before the federal commission, and allow the railroads to file rate tariffs in the states simultaneously with those filed with the national government. In view of the thoroughness with which the Interstate Commerce Commission scrutinizes all evidence upon which the railroads base their claims to any rate increases, I am sure that no state would be running the slightest risk of giving any railroad more than was its just due, while, at the same time, procedure would be greatly simplified,

and expense, both to the railroads and to the state governments, would be saved.

A CASE WHERE A STATE SET ASIDE THE FEDERAL AUTHORITY

One of our neighboring states, I regret to say, for a period of three years maintained a scale of intrastate passenger rates which conflicted with the interstate rates specifically authorized by the commission here at Washington. We had, therefore, during that long period the spectacle, which, I am sure, did not reflect credit upon our national capacity for self-government, of a state setting aside the action of the superior federal power, while citizens of other states were encouraged to violate the spirit, if not the law, of the interstate commerce act by crossing into the state in question in order to circumvent the rates established by the Interstate Commerce Commission. I am glad to see that this matter has now been disposed of, and that the commission of the state to which I refer has at last consented to have its rates equalized with those established by the federal authority.

Lest any of the representatives of the state commissions present here may feel shocked at the example which I have just given, let me direct their attention to the fact that in the Central Freight Association territory, there are still many intrastate rates which have never been readjusted to conform to the decision of the Interstate Commerce Commission in the five per cent rate case decided in 1914. I will not say a word as to the situation West or South.

At the present time, when the railroads are so urgently in need of additional revenues, it would be very helpful if, in view of the small increases conceded by the Interstate Commerce Commission in the rate case of this year, the various state commissions would all promptly act and allow the railroads to apply these rates to intrastate traffic also. I can assure you that what was granted is not half enough, but if the states would permit it to become fully effective the railroad situation would be materially aided. . . . I feel that state commissions should regularly be represented at all federal rate hearings, and that, unless some extraordinary reason exists, should acquiesce in the judgment of the federal commission, and authorize all changes necessary to conform thereto without further proceedings.

NO ROOM FOR PARTISANSHIP

The failure of the states to take a proper place in the regulation of our railroads has given rise to great misgivings, and many states have allowed the railroads and investors—and I suspect the public—to feel that railroad regulation was rather a partisan question than a serious business and economic question. We want your co-operation, and co-operation means prompt action and leadership. In this country, when action and leadership are not forthcoming in the affairs of a corporation or any public body, it must eventually go to the scrap heap, and some other corporation or body must carry out the National will; but meanwhile the country suffers. We are deficient in terminal facilities and equipment because of insufficient earnings and unduly low rates since 1907; and the country and the business man are paying the price of neglect, notwithstanding all our efforts to help them. Bricks without straw cannot be produced. High costs, high taxes, and high wages cannot be paid without sufficient rates. The Pennsylvania Railroad faced the war of 1861 with average freight rates of 2½ cents per ton-mile, and the war of 1917 with average rates of slightly over 6 mills per ton-mile. Yet nearly everything that goes into the expense of railroad operation costs far more now than it did when the Civil War opened.

Testifying before the Joint Commission of the states of New York and New Jersey, yesterday, on port conditions in New York Harbor, I was obliged to point out the results of the unremunerative rates which the railroads have been com-

pelled to accept, stating that over \$20,000,000 should have been spent on the Pennsylvania's New Jersey yard and terminal facilities, to serve that port properly.

The situation is little different elsewhere. In Baltimore, embargoes exist and freight is being unloaded on the streets; the lines of the Philadelphia, Baltimore & Washington should have immediately spent upon them over \$10,000,000 for additional facilities. Our lines serving the lake ports and the Pittsburgh, Youngstown and other great industrial districts are suffering from embargoes; all, in my judgment, because the returns allowed to the Pennsylvania System have been entirely inadequate for very many years.

2385 RAILROAD COMPANIES

Another field for co-operation by the state commissions lies in aiding to bring about uniformity of state laws. The day is here for the consolidation and unification of railroad systems. No less than 2,385 separate railroad corporations report to the Interstate Commerce Commission and I hazard the guess that at least 2,300 of them could be merged into the bigger systems with vast benefit to the public and everyone else concerned.

There are still, in the Pennsylvania Railroad System, about 115 active transportation companies, all necessary, as matters now stand, for the conduct of the service. I think we will all agree that this is just 114 too many; but when we reflect that they represent what were originally more than 600 separate incorporated companies, we can feel that some progress is being made in the right direction. But in any question as to increased rates, the profits or losses of these separate companies play no part in the consideration of the matter by the Interstate Commerce Commission, which looks only to system results. In fact, little attention is given even to large individual railroad systems, because the country is so immense, and the interests of the public in all the states so intertwined, that the results of a whole region are considered, such, as for instance, the Trunk Line territory, or the Central Freight Association territory, or the entire railroad region lying between the Mississippi river and the Atlantic Ocean and between the St. Lawrence and Potomac rivers. Yet many of the state regulative bodies are still working under laws and powers that existed when roads ten miles long were being incorporated, and when a railroad meant little more than rail laid along a public highway. A national conception of transportation is wholly absent from the statutes of many of our States. For instance, prohibitions against the acquisition of so-called parallel or competing lines still exist, oblivious of the fact that a 10- or 20-mile stretch of intrastate line obviously cannot be competitive with a 12,000 mile interstate system running in the same general direction. Nor would such prohibitions, in any case, be needful under our present stringent laws against discrimination. I am glad that there is less and less public sympathy with legal conceptions that are anachronisms, but we have still far too many laws and lawyers out of harmony with the actual conditions of today. It is in the highest public interest, for the furtherance of adequate transportation service, that every possible encouragement should be given for the merger, in law as well as in fact, of small lines into large systems, and whatever obstacles still exist against the accomplishment of such ends are stumbling blocks in the way of progress and stand in defiance of economic law. We need a broad, national recognition of this fact, and you men can greatly aid in bringing it about.

TRAFFIC POOLS SHOULD BE LEGALIZED

Even from the federal standpoint there is no longer any necessity for the application of the Sherman law to the railroads. All possible needs for its restrictions have been superseded and made obsolete by our present system of almost complete public regulation. We are having concrete proof of this right now, before our eyes, in the work which the Rail-

roads' War Board is doing in full co-operation with the Interstate Commerce Commission and the other federal authorities. Under the spur of the great necessities arising out of the needs of the common defense, we may be forced to go very far. In order measurably to protect the investment of the public in our railroads, and promptly secure needed transportation, we may be compelled to pool traffic and train service, shift locomotives from one line to another, and do many other things, in the nation's interest which are not now recognized by any law but the necessities of war.

I wish here to say, most unequivocally, that in my judgment, the pooling of traffic by the railroads is essential for the public service and should be affirmatively legalized, not only for the period of the war, but for all time. The restrictions of the Sherman law should not apply to the railroads, and mergers and combinations intended to increase efficiency, simplify accounting, and eliminate the wastes of competition, should not only be countenanced but encouraged, under public supervision and control.

The Pennsylvania Railroad is still a corporation of only one state, although its lines are operated in thirteen different states. We hesitate to become a corporation of other states because of the conflict and confusion of laws and regulation, and we look to the time when either the federal government shall take full and exclusive charge of all interstate transportation questions, including incorporation, security issues and rates, or else when the state and federal authorities shall so co-operate that only one line of decision and action shall apply. Then the owners, managers and the general public will be fairly protected, and railroad credit will be in the hands of responsible regulative authority.

What I say is not spoken with any hostility to state governments or state commissions, for under state charters we have lived and prospered in the past. But the time has now come, in this great nation, when it is no longer possible to administer, in the proper interests of the public, a railroad corporation that depends for guidance upon many different commissions with diversified laws, traditions and procedure, and still have the efficiency necessary for our continued national welfare. This lack of uniformity begins with the manner of incorporating a railroad company, and extends to capitalization, operation, and rates, and even to such matters as the width of the right-of-way and the method of electing directors.

THE STATE COMMISSIONS' FUNCTIONS

Let us not overlook the very important fact that, aside from questions relating to our great railroad systems, the state commissions have on their shoulders the responsibility of regulating and supervising hundreds of public utility enterprises, representing billions of dollars of invested capital and serving, in a truly intrastate sense, our great and growing communities. This is properly a duty of the state authorities and the responsibility of discharging it adequately will inevitably become more weighty and serious with the passing of every year. I am confident that in its intelligent performance you may, with profit to the public and increased prestige to yourselves, expend the full measure of your energy.

In the matter of railroad valuation, also, we need the co-operation of the states. We have a federal valuation law that is most difficult to interpret and, if carried out as tentatively proposed, will involve enormous cost, while the results may be of very doubtful value.

C. A. Prouty, the director of valuation, and an experienced railroad regulator, has recently said that the solicitor of the division of valuation holds "that the valuation act does not require the commission to find an ultimate value." In this Mr. Prouty acquiesces, but follows with the personal observation that it is "his conviction that an ultimate value for rate making purposes should be stated, and that the full benefit of this valuation cannot be realized unless this is done."

Mr. Prouty says that the act was the result of repeated recommendations of the Interstate Commerce Commission, which he understood provided for a valuation in dollars as a whole. Now, if congress has given us a law which does not enact the views of that body, and is not fair to the owners of the railroads and the public, why not forthwith try to correct the law, after full conference with the federal and state commissions and railroad representatives, with the results embodied in revised and explicit recommendations to congress? Failing to secure agreement, then why not recommend the suspension of the work and save an enormous expenditure which may have little value? Why, in this uncertainty, proceed further with this work, now requiring the labor and attention of about 1,500 men on behalf of the government, and about 4,500 men by the railroads, and costing ultimately over \$50,000,000?

I am one of the few railroad men who believe that federal valuation should be pushed to a conclusion, but I wish to voice my deep conviction that it should be a real valuation, based upon a marshalling of facts and data which may be used for any purpose in the future. This is my individual view, based upon a long experience in valuing railroad property for purchase or leasing. Railroad properties are constantly being valued, and are being bought, sold and leased on such valuations, and have been, frequently, for the last 60 years. It has been possible to do this without encountering the tremendous expense, complications, difficulties and grave differences that are being experienced in the federal valuation; and it will be possible to do so again. I believe that today we can have a real governmental valuation of our railroads, and one that will be of real utility, just as soon as we make up our minds that practical considerations, and not theory, shall govern the procedure.

We, therefore, ask you, as part of your public duty, to take an earnest and active interest in this matter. Do not content yourselves with merely combating the railroads' arguments, where you think them vulnerable or in error. This is a place for constructive work, in which you can perform a service of value by aiding in bringing this vexed and difficult problem to a just and satisfactory solution.

PROTECT THE CREDIT AND EFFICIENCY OF THE RAILROADS

To return to my starting point, we ask your aid and co-operation in these matters: Simplification of accounting, elimination of unnecessary reports, prompt according of reasonable rates, legalizing pooling of traffic under proper public supervision, encouragement of mergers to promote efficiency, relief from obsolete restrictions of state statutes and the Sherman law, and obtaining real valuation of the railroads. Your influence in all these matters is potent.

The government cannot move, in this great struggle, without the effective aid of the railroad system. Therefore, let us, through co-operation, make it a real and vital force, and a mighty arm of the Nation in achieving success in our battles, our commerce and our National ideals. Carefully consider the narrow margin of earnings allowed to the railroads, under public regulation, since 1907, upon the huge investment placed at the disposal of the public. I think you will then realize why it has been, and is now, impossible to provide the requisite capital to furnish adequate terminal facilities, and take full advantage of electrification and improved appliances in equipment and operation to keep the railroads well in advance of the growth of traffic. . . . We have given a sign to all the world that this democracy has dedicated its men, its honor and its private and corporate wealth to the nation, so that it may be in the first rank to fight for the world's freedom. . . . In this great work it is an honor for us all to share, realizing that transportation, and especially railroad transportation, is a national service and in the highest degree essential to national prosperity in times of war or peace.

LOCOMOTIVE DESIGN FROM A MAINTENANCE STANDPOINT*

By W. H. Winterrowd

Assistant to Chief Mechanical Engineer, Canadian Pacific

The type and size of a locomotive have an important bearing on certain details of design. A discussion of the factors relating to the selection of the desired type and size is far beyond the scope of this paper as it would involve a thorough consideration of the economics of railway operation.

Occasionally some detail of the resulting design, while undesirable from a maintenance standpoint, is unavoidable. However, the majority of locomotive details are free from other than purely local restrictions and may be designed almost entirely from a maintenance standpoint.

It should not be inferred from what follows that mechanical and operating men, as well as locomotive builders, have not given a great deal of consideration to the points mentioned. Very many locomotives in service today bear witness of such consideration. However, there are at present justifiable reasons for emphasizing and reviewing the importance of locomotive design from a maintenance standpoint.

To-day, under changed conditions, the railroads are being called upon to render greater service than ever before. But little new equipment is available other than that which the railroads may build in their own shops. Repair shops are being worked to capacity. Skilled railway mechanics are scarce. Material of all kinds is difficult to obtain. All of which means that maximum service must be obtained from every bit of existing equipment. It is, therefore, essential to consider every legitimate means whereby the "out of service period" of a locomotive may be decreased and the "in service period" increased.

All new locomotives should be constructed to give maximum service with minimum maintenance. All locomotives being rebuilt, or modernized, should be turned out of the shops prepared to give similar results. Any improvement that can be made to any locomotive, new, modernized, or under repairs, which will result in increased service, increased efficiency, or decreased maintenance, will help to increase the capacity of the railroads.

The following covers briefly a few of the points worthy of consideration:

BOILER

It seems hardly necessary to state that a well designed boiler of ample capacity is easier and cheaper to maintain than one of smaller capacity and which has to be forced continually. The importance of ample capacity can scarcely be over-emphasized, either from a maintenance or operating standpoint. Within its limits of weight and size a boiler should be designed to have a capacity as large as possible consistent with other governing factors. In this connection the values of the superheater, the brick arch, and the feed water heater are unquestionable. These values have been practically demonstrated from the standpoint of economy as well as locomotive capacity.

The maintenance of locomotive boilers is an important factor, the greatest difficulties being leaky flues, leaky mud rings, broken staybolts and cracks in firebox sheets.

Knowing that firebox heating surface does a great deal more work per square foot than the flue heating surface, boiler capacity does not depend upon long flues. Short flues are the easiest to maintain.

The radii of door and back head sheet flanges should be studied in relation to the staybolt stresses. Too small a door opening radius will frequently result in cracking of the sheet at this point because of insufficient provision for expansion.

Mud ring corners of ample radius will be easy to construct

*From a paper before the Canadian Railway Club.

and maintain. Trouble due to small radius has, in many instances, been overcome by electric or acetylene welding the bottom edges of the sheets at this point to the mud ring.

Flexible staybolts reduce staybolt breakage. A careful investigation will indicate the zones of maximum staybolt stress and sheet movement. In these zones the flexible bolts will give good results and reduce staybolt renewals.

In connection with the barrel of the boiler, points which may be mentioned are—throttle and dome arrangement which will permit interior inspection of the boiler without the removal of the standpipe; also the elimination, as far as possible, of all small studs. The latter will apply equally to all parts of the boiler under pressure.

Expansion slides, instead of an expansion sheet, under the front of the mud ring, will eliminate the maintenance of a considerable number of bolts and rivets. Proper consideration of all other expansion sheets will further reduce maintenance of many bolts and rivets and tend to eliminate the many resulting troubles as well.

FRAMES

Frames should be of ample cross section and well braced to hold them rigid. Maximum cross section may be of little avail unless accompanied by sufficient and properly located bracing. In this connection, it hardly seems necessary to mention the advantages of a valve gear located outside the frames. The outside gear has made possible better frame bracing, to say nothing of the advantages of easier inspection and maintenance of the gear itself.

Where cylinder design will permit, a one piece frame with a top tie splice seems desirable. Where large cylinders prevent the above arrangement, a one-piece frame with ample depth under the cylinders, and having no reduction in thickness, will give excellent service.

MOTION WORK

All bearing pressures should be as low as consistent with good practice in order to reduce wear and resultant replacement. Ample pin length is desirable in order to obtain lateral stability. Arrangement of motion and design of back steam chest and back cylinders covers should be such that both valve stem and piston rod packing will be easily accessible.

Valves of light weight will reduce the load on all valve parts and result in reduced maintenance.

Selection of high grade, close grained, cast iron for cylinder and valve bushings, piston heads and rings, and in some cases rod bushes, is more than warranted in view of the increased mileage obtainable and the corresponding decrease in maintenance.

If conditions permit the consideration of heat treated, or alloy steels, the unbalanced forces may be very materially reduced by the use of light reciprocating parts. The reduction of such forces will in turn tend to reduce the maintenance of pins, bushings, etc.

EQUALIZATION

Locomotives should be equalized so as to secure the most efficient guiding power from both leading and trailer trucks, or wheels. This involves the proper distribution of weight and a means of keeping the proper weights on the various axles at all times.

In general, the best results seem to be obtained by dividing the equalizing system so that the division between the front and back systems is as directly under the centre of gravity of the locomotive as the wheel base and other conditions will permit.

The spring gear and equalizing system should receive particular attention when being erected and also when being repaired. The tops of the driving boxes should be milled out squarely and in a plane parallel with the journal bearings. The equalizer and saddles should be fitted to their seats squarely with the pin holes so that the engine will ride

squarely on her springs and track properly. The same will apply to the trailer truck equalizers and spring rigging. Trailer trucks that do not carry the back of the engine level are responsible for much avoidable tire wear.

SPRING AND BRAKE RIGGING

A driver brake main fulcrum shaft in two pieces of equal length, the outer ends supported in bushed bearings integral with the main frames and the central portion supported by a sleeve, will give more even distribution of braking power and maximum accessibility for repairs and adjustments.

Brake cylinders, if at all possible, should be located vertically, in order to reduce packing wear and provide accessibility.

Brake shoe heads and hangers should be so constructed and hung that shoes will swing clear of the wheels when the air pressure is released and permit an easy application of new shoes.

The ratio of brake cylinder to brake shoe pressure should be kept as low as consistent, and should not exceed commonly accepted ratios. This will insure that false travel will be kept to a minimum.

PIPING

The importance of ample clamping and provision for expansion cannot be overemphasized. Piping should be as short as possible consistent with conditions. Accessibility is of prime importance. Piping should be so located that there is no obstruction of washout plugs, arch tube covers, pads, etc. Where pipes pass through the front of the cab, provision should be made for clearance or for sleeve protection to prevent wearing or cutting.

The Canadian Pacific has found it a decided maintenance economy to place lubricator piping from cab to cylinders, etc., in a slightly larger wrought iron pipe where the feeds pass beneath the jacket and lagging. By this means the feed pipes can be removed or applied without the necessity of removing any outside covering.

MISCELLANEOUS

Removable liners on engine and tender truck pedestals make it easy to take up wear and reduce pedestal renewals. To prevent rapid wear between the wheel hub liner face and the driving box sufficient provision for lubrication should be made.

All oiling points should be made as accessible as possible. Handholds or small steps, properly located, to make some oiling points accessible, will soon pay for themselves.

Boiler jacketing should be applied in sections so that panels can be removed with a minimum of labor.

The foregoing are but a few of the multitudinous details which merit most careful thought. But little mention has been made of the possibilities of simplified design by the use of cast steel. It is felt that with the development of the cast steel industry and the production of castings which are practically equivalent to wrought iron that locomotive construction in the future may be greatly simplified. We are today using casting that ten years ago would have been deemed impossible to successfully cast. For example, one piece locomotive frames are now under consideration and will soon be in experimental service. These consist of the two main frames and all cross braces cast in one piece. This is an indication of the degree of simplification that may be obtained. The maintenance of such parts has in turn been made possible by the development of the art of electric and acetylene welding.

In conclusion, simplicity co-related with efficiency should be one of the keynotes of locomotive design. This principle, which in other words is simply good judgment, will make for that degree of efficiency which will be reflected, not only in reduced maintenance costs, but also in the increased capacity of the locomotive plant as a whole.

Farmer and Railroad as Partners in Industry*

They Are Mutually Dependent for Success, Yet the
Farmer Causes Railway Regulation That is Harmful

By W. B. Storey

Vice-President, Atchison, Topeka & Santa Fe Railway

THE railroad, from an agricultural point of view, has in the past been an intangible something to be greatly desired until obtained and then something to be blamed for every manner of ill-luck, to be kicked and cuffed about when there was nothing else to abuse, to be taxed more heavily when revenues were short and, in general, to be made the scapegoat of the community. The farmer has not been able to recognize any community of interest with the railroad. He seems to regard it as an organization having an unlimited command of capital that can do anything by willing it and as generally opposed to everything the farmer wants. Most of the farmers in this state came here after the railroads were here. They accepted them as one of the gifts of nature; soil, water, sunshine and the railroad were at hand and all that was needed was to take advantage of these gifts and by the proper combination begin to make money. The railroad was a very convenient element of this combination because if any of the first three elements failed, the results of the failure could be rectified by taking it out of the fourth, the railroad being the only part of the combination that could be regulated. Today there is hardly anything that happens that is not charged directly or indirectly to the railroad. This feeling is carried so far that every act of the railroad, whether of omission or commission is ascribed to malicious intent on the part of the officers of the road.

If a carload of fruit is delayed by a washout it is a deliberate act on the part of the corporation. If a claim is not promptly paid it is an effort to escape just responsibility. If an employee is impolite it is the act of the management, the fact being overlooked that the employees of the railroad are generally taken from among the people whom they serve. The sole impression, therefore, of the average farmer about the railroad is that it charges very high rates, that it gives very poor service and that it pays its taxes grudgingly.

When the earliest railroads were built no one dreamed of the tremendous stride that was being taken. Those were constructed with the idea of making somewhat easier the limited interchange which then existed but the actual opening up of the land in the manner which has occurred was not foreseen. As illustrating this I would point out that when the first transcontinental railroad was built to California one strong argument that was used to sell the securities was the enormous commerce that would be built up with China and the Orient and very little was said about the business to be developed along the line. There was practically none at that time and few could see the possibilities of the future. Abraham Lincoln, when appearing as attorney for the first railroad to cross the Mississippi, in its application for permission to build the bridge, caused a smile to pass over the room when he suggested that the time might come, in the distant future to be sure, when as much freight might cross the river as then passed up and down the stream. Today that one railroad carries daily across the river more freight than ever passed up and down the stream in a month. In those days it was thought the railroads might bring products to the rivers, but that they could actually supplant the rivers was unbelievable.

HOW RAILROADS DEVELOPED AGRICULTURE

During all this early period there was but little agriculture in its present sense. At once, however, on the construction of railroads, agriculture came into its own; the products of the west could reach the east and even by combining with sea transportation could go to Europe. The land began to produce and immediately came a demand for the land and settlers poured into the newly opened country. The lands adjacent to a railroad were at once settled and then the country beyond the railroads and this, in turn, called for more railroads. The country, as a whole, came to recognize the absolute necessity for transportation and local and government aid was given to induce railroads to build; and capital, not recognizing some of the facts that it has since learned, poured its resources into the construction of new roads. In this manner came development of the country, and to make you realize how rapidly this development came I would point to the fact that the entire railroad mileage of the United States has been built in eighty-seven years and every mile of railroad between Chicago and the Pacific Coast has been built in my lifetime. Coincident with that period has come the entire agricultural development of the west.

But the rapidity of growth brought changes in economic conditions. Railroads were built faster than the country could absorb them; i. e., the country was ready for development, but there were not enough people to develop it, the supply of farmers wanting cheap land having been exhausted. The railroads thus found themselves with miles of rails but with no business. Thus it was discovered that people meant products and products meant business; and immediately followed the effort to induce people to come to the west and finally came the establishment of colonization agents in Europe. Through this means large sections of the country were settled and thousands and thousands of foreigners came to this country. The railroads, therefore, really helped populate the country, and even today this same process is going on, not perhaps by bringing people from Europe, but by bringing people from the more thickly settled portions of the country to that which has been just opened up.

It might be mentioned here incidentally that this rapid development brought in its train many mistakes and not only did financial wreck come to many railroads but to many farmers. The latter were not acquainted with the limitations of the soil and climate and, as in every new country, many were unsuccessful and whole sections of states that were once settled became waste land again. The railroads, however, that had been built to serve such sections could not move out as had the settlers and they were compelled to remain and go through all the vicissitudes of bankruptcy. This, in turn, gave opportunity for people to charge that railroads were improperly managed or purposely wrecked, when, as a matter of fact, they were following only natural laws; one of which is that if there is no business a railroad cannot exist. But this unproductiveness of the country led to efforts on the part of the railroads to make it productive. Consequently there are today all over the country, in the service of the railroads, expert agriculturists, whose function it is to make two blades of grass grow where one grew before. In the east the railroads are trying to rehabilitate that country of deserted farms. In the semi-arid west the railroads

*From an address delivered at Berkeley, Cal., on October 13, on the occasion of the dedication of Hilgard Hall, the new agricultural building of the University of California.

are teaching the farmer the kind of crops to which the soil and climate are adapted and the methods of farming that will produce the best results.

You will thus see that co-incident with the settlement of the country came the raising of crops and produce that demanded and required the railroads and the construction of railroads required the raising of crops; and the two interests, agriculture and transportation, became so closely interwoven that they are now absolutely inseparable.

California early turned its attention to wheat which was raised in the valleys and brought down to the seaboard for shipment abroad. Other than this there was little that California produced agriculturally that could bring capital into the state and even wheat brought such low returns, on account of the distances that it had to be carried to reach a market, that the rewards were meagre. The fruit raised in California for local consumption was of excellent quality but with no market there could not be much growth in the industry. The railroads at the same time traversed the continent and had practically nothing to haul eastward. They could not haul the wheat to the eastern markets because the vast wheat fields of Kansas and the Mississippi Valley were so much nearer the market that they could always undersell the California product. From the double need, therefore, on the part of the farmer for something that would make larger returns and on the part of the railroads for business, came the gradual development of the fruit industry. The original attempt to carry fruit east was made by express train, a car being shipped occasionally, sometimes with bad results but sometimes with profit. After this came refrigeration which permitted a longer period enroute and transportation in freight trains, with the accompanying lower costs which, in turn, meant greater profits; and finally came the business as it is developed today. A great industry on which the prosperity of a state depends has been produced by the farmer and the railroads acting together.

THE RAILROAD AND FARMER AS PARTNERS

The farmer provides the land, selects the best varieties of trees, furnishes water, cultivates the soil, gathers the fruit and through his packing associations cleans, boxes and loads it, while the railroad provides proper kind of cars, has them on hand when wanted, moves the cars immediately they are loaded, ices them at proper points along the road, keeps them moving and delivers to some point two thousand to three thousand miles away at a scheduled time. If there is failure in any one item either on the part of the farmer or the railroad, the entire product of all the labor is lost. All California has thus been developed with this absolute dependence of the farmer on the railroad and yet I doubt if there has ever been any realization of the fact that the two are one; that they are partners that cannot dissolve partnership, that what helps the farmer helps the railroad, what helps the railroad helps the farmer and that one cannot exist without the other.

Let us consider first the organization of a railroad. Is it a reservoir of money that will give forth its contents by edict of law? Is it capable of creating something from nothing? Is it the enemy of all? Is it a combination of Wall Street capitalists who are bent only on extracting from the country everything that can be taken? It is, in fact, none of these things. It is an aggregation of ordinary people, such as you and I, who join their interests to manufacture transportation. These people are shareholders and each one pays into the concern a certain sum of money; the contributions varying from \$100 upward. As illustrating such an organization I might mention the Santa Fe Railroad. On June 30 of this year there were about 44,000 shareholders, and the holdings averaged about 78 shares each, there being many holdings of less than ten shares. These people elect from among their number directors, and

the directors—certain officers to manage the affairs of the business. These officers, who are also just ordinary people, such as you and I, proceed to build certain lines of railroad with the money that has been paid in by the shareholders and to carry over those railroads, for hire, freight and passengers. As the business develops, more miles of railroad are built, possibly with money from the sale of additional stock or perhaps with borrowed money, and the business expands just as in the case of any other business that is furnishing something for which there is a growing demand. If the earnings are enough to give a profit over and above the cost of the article they are manufacturing, the shareholders are the ones entitled to the dividends and if there is a loss they either meet the loss by paying an assessment or they lose their property to the people from whom they have borrowed money. Railroads, therefore, are organized and built to manufacture transportation for profit just as the orchard is planted and developed with the idea of profit. And just as profits in farming induce more investment in farming, so profits in railroading induce more people to invest in railroads. The reverse also holds and unless a railroad pays, people will not invest in it and its credit is destroyed.

RAILROAD MUST PROSPER IF FARMER IS TO SUCCEED

This brings us to a proposition that may sound strange; viz., that it is essential for the success of the farmer that the railroad should prosper. You may ask why, after the railroad is built, is the farmer interested in whether it pays or not? It is compelled by law to run and the farmer is not interested in the shareholder. If the unfortunate man made a mistake in investing in such a concern that is his fault. Let us, however, look into this farther before deciding hastily. In the first place the railroad, like any other business, must grow and keep up with the growth of the country. A line of rails may connect San Francisco and New York, but that is not a real railroad. The latter needs locomotives, cars, sidings, roundhouses, second track, stations, and as the business of a railroad expands, more cars, more locomotives to pull the cars, more side tracks to pass trains, more machine shops to repair engines, larger water and coal stations, and, in fact, more of everything that forms part of a railroad. It is due to lack of these that trains are delayed, that car shortages occur, that freight congestions arise, that embargoes on freight are placed. In order to keep up with the growth of the country, the Santa Fe railroad should spend in additional facilities, such as I have named, at least twenty millions a year, and it should be able to obtain that amount of new money either by stock subscriptions or by borrowing. To do this its credit must be absolutely sound; i. e., investors must be sure of getting returns on their investment. Now, does it come home to you why the farmer is interested in the shareholder? Possibly the whole problem can be better understood by a study of the last five years. For a long period prior to the beginning of the war and for some months afterwards, business in this country was at an extremely low ebb. The railroads suffered with the balance of the country, even more so because, due to commissions and legislatures, their conditions had become more seriously hampered than other lines of business. As a result many roads went into the hands of receivers and others only avoided this by the most careful business methods. The direct consequence was that investors became shy and either refused to invest at all or only when high rates of interest were offered. The railroads, therefore, could not add to their facilities. Then came the business boom and with it the cry that the railroads were not taking care of the business of the country. All the facilities I have named were lacking in sufficient quantity to take care of the business offered and the best efforts of the entire railroad world were unable to meet

the demand. And even today the business of the country is keeping ahead of the railroads. They are struggling to catch up but it is very hard to do so. It is to the vital interest of the farmer that the railroads should keep up with the progress and growth of the country and, therefore, he is interested and deeply interested in the solvency and prosperity of the railroad.

We are now in a position to consider what makes for prosperity in a railroad. The answer is, ample business at proper rates. This brings us at once to the great big point of difference in the past between the farmer and the railroad; viz., rates. This is the rock on which we have split. This is what has led to the misunderstandings, the laws against railroads, the unjust regulation of railroads and to many, if not most of the troubles, that are afflicting railroads today, and, while they have continued to exist under the lower and lower rates, and the more oppressive regulations and the higher taxes, this does not prove that this course of treatment is the best for the railroad or the best for the farmer. I need not cite the fable of the man who was succeeding so well in teaching his horse to eat green colored shavings. On the other hand, the lower and lower rates have made it harder and harder for the railroads to live. They have felt compelled to resist each and every attempt to cut the rates. If rates could follow prices up and down, perhaps at times they could afford to lower rates temporarily, but you may possibly remember the lemon case. When the duty was removed on lemons and the Sicily lemon came to this country at such a price that the California lemon could not compete, a request was made for a lower rate so as to enable the industry to keep alive. This was given. Later the duty was restored and the railroads attempted to go back to the earlier rate, but the effort was resisted and lemons have been hauled ever since at a rate fixed to help out the farmer. The railroads have, therefore, pushed back whenever the suggestion of lower rates is made. This constant struggle has had the effect of making the rate question apparently the irreconcilable conflict; the railroads insisting that they must have higher rates or starve and the farmer just as strongly believing that unless there are lower rates he will starve.

IMPORTANCE OF LARGE TONNAGE TO A RAILROAD

Let us, however, drop the rate question for a moment and look at the other element in prosperity for railroads; viz., ample business. Have you ever heard the word tonnage? It may be a new one, but in the railroad world it is an important one. Tonnage multiplied by rates gives revenue. Give a railroad all the tonnage it can haul and you may cut the rates instead of raising them and still the railroad will be prosperous. Why are the average rates per ton mile east of Chicago about half of those west? Because the roads in the east have tonnage. Why are the earnings of the western roads showing an increase this past year in spite of the higher cost of everything? Because there has been a heavy increase in tonnage. By increasing the tonnage loaded in cars the item of car and of car repairs per ton hauled is cut down; by increasing the tonnage in trains the element of wages, coal and engine service per ton hauled is decreased and by increasing the number of trains the cost of track maintenance, of administration and of interest charges per ton hauled is decreased. Therefore, tonnage is the great desideratum of the railroad; heavier loaded cars, heavier loaded trains and more trains. As a consequence, to the railroads, tonnage is, in reality, more important than rates.

Now let us look at the farmer's side of the controversy. There are two things that the farmer needs to make his part of the common undertaking a success; viz., low rates and good service. While the farmer, yes, and the entire country, has been keeping watch over rates, the matter of service is the real necessity; quick service and prompt service, sure

service and reliable service. Of what use is a low rate if your products cannot get to market on time or in proper condition? The service given is all important and should be carefully weighed when you are doing your regulating, for you have in your own hands, through your commissions, the final decision in the matter of rates.

Having seen that there are other things besides low rates that the farmer needs and other factors than high rates that the railroad needs, we are in a position to study rates more calmly. The matter is, of course, an important one and if a railroad cannot get tonnage it must have rates. Let us start out by saying that the rate should be a fair one. You smile and ask, but what is a fair rate? The answer is simpler than you think; it is one that will produce the maximum of business. A rate that allows business to develop steadily and constantly is a fair rate. On such a basis as this a rate might be and often is made so low that if applied to all the business of the road it would cause bankruptcy, and, on the other hand, it may be so high as to give a handsome profit to the railroad over and above all expenses and interest charges. It was the misconception of this principle that gave rise to the belief that railroads charged all the traffic would bear. That the rates for the farmer in this state have not been too high in the past is shown by the remarkable development of agriculture in this state. The railroad will carry an orange three thousand miles for you for about half a cent, it will take a lemon for one-fifth of a cent, a pound of potatoes or a pound of beans for three-quarters of a cent or a pound of dried fruit for a cent. Are these rates excessive when you think of the service performed? In no country in the world are freight rates as low as in the United States. The railroad rate today has no real influence on your profits. Different conditions in different years give you a good year or a bad year. If Florida has a large crop of oranges and it comes to market at the same time as yours, your returns will be low; if you yourselves overstock the market the price will be low and your profits small, but these are not reasons for lower rates. The fact that your orchard interests have developed and are continually developing is all the reason that is necessary to show that the rates have been low enough. Let us, therefore, stop contending over the rate question and let us give our attention to the increase in tonnage and to better service. You will be surprised to find how small the rate matter will seem.

HARMFUL REGULATION OF RAILROADS

Having now discussed the great big point of difference let us glance at some of the troubles other than low rate that affect the prosperity of the railroads. In order to control the rates you have formed commissions and the railroads are thus the subject of regulation. This should be a help rather than a trouble if properly handled, but they are, as a matter of fact, over-regulated. There is regulation by the state commission; there is regulation by other state commissions; there is regulation by the Interstate Commerce Commission; there is regulation by the Health Commission; there is regulation by the highway commissions; regulation everywhere, and then when the different commissions have reached the limit of their consciences the legislatures take a hand. Have you ever heard of the full crew law where the legislature has declared in the interest of public safety how many brakemen shall be provided for trains? Can anyone show why a train in Illinois can be operated safely with two brakemen and the same train in California must have three? This simple little California law costs the Santa Fe alone \$50,000 a year. Have you ever heard of the train length law? Possibly not, but in a neighboring state they limit the number of cars that may be handled in a train. Can anyone show why the public safety of Arizona is benefited by limiting the length of trains to seventy-five cars,

whereas in practically every other state it is permitted to haul all of the cars the locomotive will pull? It is not regulation to which there is objection, it is fool regulation, it is conflicting regulation. Do you know that the Santa Fe railroad has to deal with thirteen state commissions and in addition with the Interstate Commerce Commission and the regulations of the various commissions differ from each other and also in some cases with those of the Interstate Commerce Commission?

And now you have afflicted the railroads with valuation. The state of California valued them and not only has the state spent a large amount on the work but so have the railroads. As this work was approaching completion the United States began to value them and they have been doing the entire thing over. The cost to the Santa Fe railroad, of the Interstate Commerce Commission valuation alone, is estimated to be over one million dollars and I assume as much more to the government. This might be justified if anyone could point out the advantage either to the railroad or the state. I claim that the valuation law has been enacted under a misconception. There seems to have grown up in this country the thought that the railroads should only be allowed to earn six per cent or less on their cost and that anything they earn over this is stolen from the public. This is an absolutely wrong idea. It has been necessary in the past to resist, in the courts, rate reductions and the only way this could be done was by showing confiscation; which necessitated showing that the given rates did not allow 6 per cent on the value of the railroad. But nowhere has it been decreed that 6 per cent must be the limit of the earnings. If this should be fixed as a limit there would be no surplus in the good years to help out the bad years and the average would be so low as to stop all investment. As a matter of fact, rates should not be and are not fixed on the basis of the cost of the property but should depend on the principle mentioned above; viz., that which will develop the maximum business.

RAILROADS MORE IMPORTANT THAN WATERWAYS

We felt, at first, that no matter what rates were charged we could stand them if we could only get the railroads. We then reached the conclusion that the rates were too high and that unlimited competition was needed to control this feature, and gave aid and encouragement to every railroad that asked for it. This led to the competition we desired, but other evils at once manifested themselves, such as lower rates to larger shippers. We finally stopped the discrimination by requiring that all rates be published, but we also absolutely stopped competition in rates; for what road would name a lower rate when its rival would at once meet it, leaving as the only effect of the lowered rate less income for both? We then turned to competition by water. We gave government aid to waterways and we are today pouring yearly into our waterways millions and millions of useless expenditures. You, in California, urged the Panama Canal. I know that from a railroad man a statement that money spent in waterways, yes in the Panama Canal, is economically a mistake will not carry much weight, just at present, but I make the assertion boldly and will trust to time to convince you. Have you ever realized that the charges for water service would be higher than those on the railroad if they were based on the actual cost of the improvements or that, on the other hand, the rates on the railroads could be less than they are on the water if the entire interest and maintenance of the railroads should be absorbed by the government? Have you ever realized that the railroads employ more men than can possibly be employed by water routes and that the number of people employed in your midst is a direct element in the prosperity of a country? Have you ever considered that the fostering of waterways turns from the railroad the tonnage which is the

one absolute requirement to enable low rates and that you thus deprive them of the power to give the service that is necessary for the best development of agriculture? All these things should be taken into account, and have been too little considered in the past in the making of our laws and in our feelings toward the railroad problem.

You can thus see how we, in this country, are floundering. In the teachings that will go forth from this temple which we are dedicating today let it be shown that the railroad is the twin brother of agriculture, that in considering what is best for one we must consider the interest of the other, that regulation does not mean strangulation; that unlimited competition may become destructive competition and that a low freight rate is not the panacea for all the troubles of the farmer.

"SAILING DAYS" FOR L.C.L. FREIGHT

Shortly before July 1 the Pennsylvania Railroad announced a plan for the installation of "sailing days" in the handling of l. c. l. freight and the designation of particular stations at which freight will be received exclusively for specified destinations. The purpose of this plan was the elimination of delays incident to the rehandling of freight when consolidating small shipments into full carloads at transfer stations; the conservation of the car supply by securing better average loading; the reduction in the number of car and train movements required to transfer the given quantity of freight, and improvement in the regularity of this service by systematizing and simplifying operations.

This plan was placed in operation in Philadelphia on September 1, and in Baltimore on October 1. It will also be introduced at New York, Buffalo and Pittsburgh in a few weeks and it is expected that it will be adopted ultimately at all of the important freight shipping centers on the Pennsylvania Railroad. Previous to the inauguration of this plan at Philadelphia and Baltimore, "shipping day guides" were printed and distributed among the shippers and freight organizations in these districts. These guides gave complete information concerning the days on which freight will be accepted at the various freight stations for points in all parts of the country and the closing hours at each station for the various destination points.

The cities have been divided into zones and days have been designated on which each station in the city will receive freight for different points. Closing hours have been fixed at different points throughout the afternoon to relieve the congestion of teams and to increase the capacity of the stations.

In the 10 days from September 4 to 13 inclusive the average loading of l. c. l. cars leaving Philadelphia was increased nearly 34 per cent. On this basis it is estimated that when this new system is in full operation all over the road it will save 1,000 cars a day on the lines east of Pittsburgh and Erie in the transportation of less-than-car-load freight. Since the installation of this system many letters expressing commendation have been received from large shippers, indicating that the plan is meeting with the approval of the patrons of the road.

The benefits of this plan are not confined to the individual road but are also reflected on its connections. For instance, the New York, New Haven & Hartford has announced the installation of a similar practice at a number of its stations.

A large amount of l. c. l. freight originates in New England destined for points south and west of New York and over 100 cars of it are handled through the Pennsylvania transfer station at Waverly, N. J., daily. The consolidation of these shipments at the points of origin on the New Haven will do much to facilitate the operation at Waverly transfer which is now badly congested.

EDWARD L. BROWN

Edward L. Brown, who has been elected president of the Denver & Rio Grande, has had an extremely wide experience in railway work. He has a remarkably level head even for a railroad executive and it was this qualification above all others that recommended him to the board of directors. The Denver & Rio Grande is in a rather unsettled condition. Various factors which are contending for the control of the Missouri Pacific, which is now under the domination of Kuhn, Loeb & Co., have a large investment in it, as has also the Gould estate. It was therefore necessary to select a man as president who not only knew how to operate the railroad—and the Denver & Rio Grande, even if its financial affairs were satisfactorily straightened out, is a hard proposition to operate under present conditions—but its president must also be able to shut out from consideration internal and external difficulties and devote himself body and soul to running the railroad along scientific lines.

Mr. Brown is an indefatigable worker and of such a disposition that he can turn from the most annoying problems to some entirely different subject with apparently a perfectly clear outlook. He is entirely fearless and his weakness as well as his pastime consists of work. He is capable of carrying an immense amount of detail in his head and yet this never seems to obscure the broader outlook of his work or the work of his subordinates. He is a man of kindly disposition and on intimate terms with his employees. Mr. Brown, when he was vice-president of the Denver & Rio Grande several years ago, was in general charge of the reconstruction of the Soldier Summit (Utah) section of the line. This is the most important improvement that the Denver & Rio Grande has undertaken in recent years and the replacement of the 4 per cent line with 15 miles of 2 per cent line removed the point of most serious congestion. This work was described in the *Railway Age Gazette* of November 28, 1913, page 1013.

Mr. Brown was born in Iowa in 1864. His first experience in railroad work was with the Chicago, Rock Island & Pacific in 1875 as a messenger boy. From 1887 to 1890 he was consecutively telegraph operator, station agent and train despatcher on this road. In 1883 he was appointed joint agent of the Chicago, Rock Island & Pacific, the Wabash and the Iowa Central, in which capacity he served until 1888. From this time to April, 1891, he was general agent of the St. Paul & Duluth, with office at West Superior, Wis., and from April, 1891, to November, 1891, was commercial agent on that same road, with headquarters at St. Paul, Minn. In November and December of 1891 he was chief despatcher and superintendent of telegraph, and from December, 1891, to March, 1896, he was master of transportation on this road, being promoted to superintendent in March, 1896, and retaining this position until June, 1900. From June 15, 1900,

to February 1, 1902, he was superintendent of the Lake Superior division of the Northern Pacific, with office at Duluth, Minn., and from February, 1902, to April, 1903, was general superintendent of the Montana Central. In April, 1903, he was appointed general superintendent of the Eastern district of the Great Northern, and held this position until March, 1907, when he became general superintendent of the same district with headquarters at St. Paul, Minn. From October, 1907, to February, 1912, he was general superintendent of the Western district of the Great Northern, having his headquarters at Seattle and Tacoma, Wash. From February, 1912, to July, 1913, he was vice-president of the Denver & Rio Grande at Denver, Colo. In July, 1913, he was elected vice-president of the Western Pacific also, and transferred his headquarters to San Francisco, Cal. He was elected to the presidency of the Minneapolis & St. Louis in September, 1916, but was forced to give up this position in March, 1917, because of ill health, which later necessitated an operation at Rochester, Minn.



E. L. Brown

INCREASED RATE PROCEDURE

The Interstate Commerce Commission's proposed tentative order outlining a method of procedure under the amendment to the commerce law that requires railroads to secure the approval of the commission before they may file a tariff containing an increased charge is in the main satisfactory to the railroads. This was stated by representatives of the roads in various territories, at the hearing called by the commission at Washington on Monday to consider the proposed order. Representatives of the shippers, who were present in large numbers, appeared desirous of having some plan which would give them complete notice of the carriers' applications in time to protest, but were not agreed as to how such a plan could be carried

out in practice and expressed no particular opposition to the order. The opinion was expressed on both sides that the plan should result in bringing about a greater degree of co-operation between the carriers and the shippers through conferences before tariffs are prepared and that it will probably result in many rate controversies being threshed out before tariffs are filed instead of afterward.

It was brought out during the hearing that approximately 1,100 applications for permission to file tariffs are now pending before the commission.

G. M. Freer, president of the National Industrial Traffic League, said the shippers were especially interested in securing detailed notice of the applications before they are acted upon and said he had received a suggestion that applications be put on file at places where the roads are now required to keep a complete file of tariffs. Luther M. Walter suggested that either the commission or the carriers pay for publishing lists of applications in a trade paper or papers. R. D. Rynder, speaking for a number of Chicago attorneys practicing before the commission, suggested that applications be

kept on file for 30 days, but that this should not apply to merely perfunctory tariffs intended to correct errors, etc., which should be allowed to become effective at once. He thought the plan of sending notice of applications to shippers' organizations would prove inadequate. S. H. Cowan expressed the opinion that the commission should not attempt to decide as to the reasonableness of rates before approving them for filing. A. E. Helm, of the Kansas Commission, thought that the commission should have a large measure of discretion as to handling applications; that as to many it could dispose of them informally and without publicity and as to the others it should give general notice and hold hearings.

On behalf of the southern carriers, R. Walton Moore said that the tentative plan should be given a trial and that the commission should not attempt to restrict its practice by too many rigid rules. Because a large majority of the applications would be of minor importance, the commission should not attempt to fix a definite period before they could be acted upon and a plan of widespread publicity would be unnecessary.

J. C. Lincoln, of the Merchants' Association of New York, thought a plan could be arranged by which the carriers could notify interested shippers.

F. H. Wood, representing the western lines, said the matter should be left to the broadest discretion of the commission. Otherwise, he said, the law would prove unworkable, but he thought that great good might result from it if it can be made workable, by offering an opportunity for a freer discussion with shippers about proposed advances before they are put in tariff form. He thought one result would be to do away very largely with the suspension docket.

The commission has announced that its board heretofore known as the Investigation and Suspension Board will hereafter be known as the Fifteenth Section Board and in addition to its previous duties will in future receive for the commission all applications of carriers under the amended fifteenth section for permission to file tariffs carrying increased rates, fares or charges.

THE MAINTENANCE PAINTERS' CONVENTION

The fourteenth annual convention of the Maintenance of Way Master Painters' Association of the United States and Canada was held at the Hollenden Hotel, Cleveland, Ohio, on October 16 to 18 inclusive. The officers of this organization for the past year were: President, F. C. Rieboldt, master painter, Chicago, Milwaukee & St. Paul, Milwaukee, Wis.; first vice-president, H. E. Conrad, master painter, Pennsylvania Railroad, Huntington, Pa.; second vice-president, A. E. Wilson, master painter, New York, New Haven & Hartford, Hartford, Conn.; secretary-treasurer, F. W. Hager, master painter, Fort Worth & Denver, Fort Worth, Texas.

The convention was called to order by President Rieboldt with an attendance of about 40 members and guests. After prayer by Rev. John S. Ruthledge, an address of welcome was made by Harry L. Davis, mayor of Cleveland, who spoke on the efforts being made by the people of the city to insure the success of the second Liberty Loan. Mr. Rieboldt, in his address, called particular attention to the steps taken by the American Railway Association which are designed to bring about the eventual co-ordination of the work of the various voluntary railway organizations, the plan being to designate the American Railway Engineering Association at the primary body to exercise proper supervision and discipline over the others. He urged a consideration of the matter by the convention. The secretary's report showed a membership of 75, there being no appreciable change during the past year.

A paper by C. F. Loweth, chief engineer, Chicago, Milwaukee & St. Paul, which, owing to his absence, was read

for him, and entitled "Painters and Painters," presented a rather broad aspect of the painter and his relation to life and his work.

C. H. Hall, general superintendent, Patton Paint Company, Milwaukee, read a paper on the "Painting of Interior Walls." In this he discussed the use of white lead, zinc oxide and lithophone composed of approximately 72 per cent barium sulphate and 28 per cent of zinc sulphide, as the pigments for this class of work. The relative values of these materials for interior use were outlined with respect to whiteness, durability, use with dryers and enamels and in the production of various finishes. Emphasis was placed on the need of economizing in the use of materials and the need of resorting to other ingredients for paints at the present time. The need of clean, dry surfaces was urged as absolutely necessary for success, since even the best materials may give poor results if these conditions are not fulfilled.

Edward H. Brown, editor of the Painters' Magazine, gave an extemporaneous talk on the present paint material situation. He said that the present estimate for the flax seed crop of the United States was 11,000,000 bu., whereas the normal consumption for the manufacture of linseed oil was 29,000,000 bu. The average annual production of flax seed in this country is above 16,000,000 bu., the deficiency being made up ordinarily by seed produced in Argentina. However, the last South American crop was a virtual failure and the shortage is a most serious one. China wood oil and other oils that may be used as substitutes in some cases are also scarce owing to inadequate shipping and other reasons. Soya beans and sunflower seeds, the cultivation of which has been encouraged in this country for the production of substitute oils are so much in demand for food, that they do not help the paint oil situation to any extent.

Zinc white is practically out of the market, as the government is now requiring it to be conserved for use in automobile tires. Whiting from which putty is made is also scarce, as it has not been imported for over six months owing to the diversion of shipping in favor of products considered more essential at the present time. Attention was also directed to conditions in England which may eventually obtain here to the serious embarrassment of wall paper hangers. As a measure of food conservation the British government has forbidden the use of flours of any kind for pastes.

H. B. Wilson read a paper on the measures to be taken to protect the public from paint or accident when painters are at work around stations, with particular reference to safe scaffolds and ladders and barriers to keep people away from the wet paint. This led to discussion of the use of drop cloths and building paper to protect floors and furniture.

FEW METERS AND HIGH WATER CONSUMPTION.—With only 6.9 of its services and 21 per cent of its consumption metered a per capita water consumption of 249 gal. a day was indicated at Chicago in 1916, according to the last annual report of John Ericson, city engineer. On a very hot August day the pumpage was 320 gal. per capita, and from 8 to 10 a. m. the rate was 340 gal. per capita. The total pumpage at these two rates was 753,000,000 and 850,000,000 gal. Every available pumping unit was in service.

WAGE INCREASES ORDERED IN JAPAN.—The Far East Commercial Supplement states that the Railway Board has decided to raise the wage standard. Officials receiving less than 40 yen (\$19.94) per month are to have a 2-yen (\$1) increase, and those who are paid per diem are to get 6 sen (3 cents) more each working day. "Two yen a month seems to be a small sum, but it means a great deal to this class of workers. All private establishments will probably follow suit," the newspaper states.—*Commerce Report*.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., October 17, 1917.

EASTERN ROADS ASK TO REOPEN RATE CASE

The eastern railroads, at a conference with the Interstate Commerce Commission on Wednesday, will begin negotiations looking to a renewal of their campaign begun early in the spring for a general advance in freight rates which the commission granted only in part in its decision in the 15 per cent case in June. It is understood that the western roads are considering similar action, but have not yet reached a definite decision.

The request of the eastern carriers came in a letter to the commission, dated October 12, from George F. Randolph, commissioner for the lines in Official Classification territory, requesting an informal conference. To this Chairman Hall replied by wire on Saturday that the matters referred to might be presented to the commission at a public session on Wednesday afternoon. Mr. Randolph's letter was as follows:

"The Trunk Line traffic executives, after a discussion today, desired me to try to arrange for a short informal conference with the commission next Wednesday or Thursday (Wednesday preferred) to talk over the rates on traffic not favorably acted upon in the recent decision of the '15 per cent advance in rates case,' some of which are now covered by suspended tariffs and hearings arranged for, others covered by tariffs which carriers cancelled at the suggestion of the commission; and possibly other matters germane to the subject of securing all of the results originally asked for.

"The thought arises from the carriers' keen necessities as shown by the results since the case was presented and was encouraged by the language of the commission on page 23 of its decision as to amplifying its order if the necessity became apparent. If a few of us could have the privilege of such conference on next Wednesday, it is thought it will be of great assistance at the present time in reaching a prompt conclusion as to future action."

The commission's decision allowed advances approximating 15 per cent in the eastern class rates and advances were also allowed to go into effect in the rates on bituminous coal, coke and iron ore. Since then the carriers have filed tariffs on numerous commodity rates, as to which it was claimed that advances were made necessary because of their relation to the class rates and the commission has suspended them.

The hope of the carriers that the commission may change the opinion expressed in its report of June 27 is based on the recent reduction in net income taken in connection with the commission's statement that "we shall, through the medium of the monthly reports of the carriers, keep in close touch with the operating results for the future, and if it shall develop that the fears which have prompted the carriers are realized or that their realization is imminent, we shall be ready to meet that situation by such modification or amplification of the conclusions and orders herein reached and entered as are shown to be justified."

While gross earnings have been increasing rapidly throughout the year expenses have been increasing so much faster that the net operating revenue for eight months of the calendar year, according to the preliminary summary for 177 roads given out by the commission on Saturday, shows a falling off of \$9,000,000 as compared with the corresponding period for 1916. For the eastern roads alone, however, the loss as compared with 1916 was nearly \$40,000,000, the western and southern roads still showing a gain over last year. The eastern roads, however, have shown a decrease in operating income for every month of this year, and the net revenue for eight months, according to the preliminary summary, was \$5,029 per mile as compared with \$5,714 in 1916. Their operating revenues per mile had increased from \$17,955 to \$19,663, but expenses had increased from \$12,209 to \$14,634. For August the western lines also showed a decrease in

net, while the southern lines still showed an increase and for the 220,455 miles of road the net revenue was \$507 as compared with \$528 in August, 1916.

The commission in its decision gave an estimate based on four months' figures that the ratio of operating income to investment for the year would be 5.81 for all roads and 4.89 for the eastern roads, although it said that increasing costs subsequent to April would probably diminish these figures somewhat. For seven months of the year the ratios were 5.55 for all roads as compared with 5.87 for the corresponding months in 1916, and 4.73 for the eastern roads, as compared with 6.51.

There has been considerable talk in Washington recently about a change in the policy of the administration regarding its attitude toward the railways, which it is believed has been brought about in part at least by contact with some of the big men in the railroad and financial world who have been in Washington for war work, and in part by recognition of the important part being played by the railways in carrying on the war. Senator Newlands, chairman of the joint congressional committee on interstate commerce, was recently quoted as follows:

"We have passed that period in the relations of the government and the railways when the activities of the government shall be directed to punitive and correctional action. The things which the government set out to do more than 10 years ago in the way of regulating the railways of the United States have been accomplished. The time is now at hand when the attitude of the government must and will become one of constructive co-operation."

FUEL ADMINISTRATION PROVIDES FOR RAILROAD NEEDS.

The first of a series of orders to distribute coal on a priority basis and regulate the movement of coal cars, issued on October 10 by Fuel Administrator Garfield, provides for taking care of the fuel coal requirements of the Pennsylvania Railroad, which serves about 700 mines, by a plan under which all producers of bituminous along the Pennsylvania will contribute regularly their pro rata share of the fuel needed for its operation, at the prices fixed by the government except where already fixed by contract. It was also announced that other railroads will be served through similar orders soon to follow, which will comprise the first series.

Commercial coal will be distributed by the second series of orders in the apportionment plan, giving preference in order to the government, domestic users, public utilities and all commercial organizations using coal. The present order, which recognizes the fact that unless the railroads are adequately supplied with fuel no one else can be, was adopted after conferences extending over the past two weeks with a committee composed of the following: C. M. Scheaffer, chairman Commission on Car Service; D. E. Spangler, the member of the Commission on Car Service who gives especial attention to coal matters; G. W. Kirtley, assistant to R. S. Lovett, director of priority in transportation; E. H. De Groot, Jr., chief of Division of Car Service, Interstate Commerce Commission; A. G. Gutheim, attorney-examiner Interstate Commerce Commission; L. A. Snead, representing the Fuel Administration; T. H. Watkins, president Pennsylvania Coal & Coke Corporation; J. Lloyd, Jr., of the Altoona Coal & Coke Company; W. K. Field, president Pittsburgh Coal Company and president National Coal Association; and B. W. Warren, attorney for the Fuel Administration.

The Pennsylvania, like many other railroads, was unable to contract for its full supply before the President's prices went into effect, and not only has the uncontracted coal supply been small but it cannot be obtained at higher prices. The road has therefore been obliged to confiscate coal and to set aside certain days on which it would set cars for loading only with fuel coal. Representations were made some time ago by mine operators to the Fuel Administration that their

coal was being confiscated by the railroad. The statement of the Fuel Administration says that the road's right to do this is unquestioned but that the practice diverted a good deal of commercial coal already contracted for, which displeased dealers to whom it had been consigned and also resulted in an uneconomical use of cars, confiscating cars that otherwise would have been available for commercial loading because often the railroad was obliged to keep coal on the cars longer than is necessary in the regular course of business.

The order provides the method of apportioning the uncontracted coal and also that operators who have already agreed to supply the road with the amount that would be deemed their correct percentage will continue their contracts and remain unaffected by the new order. Other mines must contribute the amount declared to be equitable by the Fuel Administration at the government price. It is stated that the amounts required will, in some instances, interfere with the delivery of full consignments called for by their contracts with customers but the railroads must be kept running and the Fuel Administration suggests that operators withhold coal from persons or corporations needing it least, and that they also attend particularly to the supply of roads other than the Pennsylvania.

"It is deemed particularly essential," the statement continues, "that coal needed by the United States government be not interfered with. The Fuel Administration may make a special priority order in special cases and intends to care fully for domestic users. Munition plants and firms manufacturing necessities of life would come into the priority order class. The plan is expected to show immediate results in an increased supply of coal cars and a steady, equitable flow of fuel to the railroads." Some of those who had to do with drawing up the order also hope that it may have some effect after the present emergency is a thing of the past as a possible foundation for placing the provision of a railroad fuel supply on some regular basis which will recognize the paramount needs of the railroads for coal and do away with the necessity of confiscation and similar methods which often cause much friction. The order is in part as follows:

"It appearing to the United States Fuel Administrator that, under the present method of procuring for the use of the companies hereinafter named railroad coal not now under contract, and which under present conditions can not now be contracted for, by the Pennsylvania Railroad Company for the use of itself and its operated companies . . . there results loss of car efficiency, discrimination in car supply as between mines, disturbance of the mine-labor factor, interference with commercial coal distribution, and interference with priority orders covering the distribution of other coal; and that an adequate and regular supply of bituminous coal for use as railroad fuel by said Pennsylvania Railroad Company and its aforesaid operated companies is necessary for the national security and defense, for the efficient prosecution of the war, and to facilitate the movement of necessities as defined in the act of Congress hereinafter referred to.

"The United States Fuel Administrator acting under authority of an executive order of the President of the United States, dated August 23, 1917, appointing said administrator, and in furtherance of the purpose of said order and of the act of Congress therein referred to and approved August 10, 1917.

"*Hereby orders and directs* that from and after October 15, 1917, and until further order of the Fuel Administrator, but not exceeding the duration of the war in which the United States is now engaged, and subject to modification hereafter by him, producers of bituminous coal operating mines (including mines hereafter opened or beginning or renewing operation) located on the lines of and served by the Pennsylvania Railroad Company and its aforesaid operated companies shall produce, sell, ship, and distribute bituminous coal to said Pennsylvania Railroad Company and its aforesaid operated companies for their use as railroad coal, upon the following plan:

"(1) The percentage proportion which the aggregate requirement of said Pennsylvania Railroad Company and its aforesaid operated companies bears to the capacity of all such mines, as rated by the railroad, shall be ascertained, and each mine which is furnishing such or a greater percentage under contract shall, during the life of the contract, continue so to produce and sell such coal at the contract price, and shall ship and distribute such coal regularly each week when the mine operates and ships, and so far as practicable in equal daily quantities regardless of other obligations.

"(2) The requirement not obtained from mines furnishing such or a greater percentage under the preceding paragraph (1) shall be requisitioned from the remaining mines at the going government price, subject, however, to any revision which may be made retroactively effective in the percentage proportion that such remaining coal requirement of said Pennsylvania Railroad Company and its aforesaid operated companies bears to the capacity of such remaining mines as rated by the railroad, subject, however, to the limitation that each mine under contract shall produce and sell not less than its contract obligation at the contract price, and shall ship and distribute all such coal regularly each week when the mine operates and

ships, and so far as practicable in equal daily quantities, regardless of other obligations.

"*It is further ordered*, That said Pennsylvania Railroad Company and its aforesaid operated companies shall, not later than Saturday of each week, file with the undersigned a statement showing the tonnage of the coal which during the following week shall be requisitioned from each producer and mine upon the authority of this order, and shall post in the office of the car distributor for each district concerned a copy of the statement so filed with the undersigned, and shall give notice to each producer from whom coal shall be requisitioned upon the authority of this order, showing the amount of coal which during the week following shall be requisitioned from each of such producer's mines.

"*It is further ordered* that this order for assuring an adequate and regular supply of bituminous coal for the Pennsylvania Railroad Company and its aforesaid operated companies is hereby given priority, subject, however, to diversion and other regulation by the Fuel Administrator, either generally or in any special case, over all and any contracts of any producer operating mines located on the lines aforesaid."

COAL PRODUCTION

The Fuel Administration issued a statement on October 10 stating that the coal production this year will exceed that of last year by 10 per cent and that of two years ago by 23½ per cent. These figures were compiled by the U. S. Geological Survey in a bulletin showing that last year's bituminous production was in excess of 502,000,000 tons and that this year's production should reach 552,000,000 tons, while anthracite should show substantially the same increase. According to the Geological Survey America is now nearly a month ahead of last year's production at this time. The embargo against sending coal to Canada has been lifted and an arrangement has been made by which it will be supplied on a pro rata basis substantially as though it were a state of the Union. Last year Canada got approximately 19,000,000 tons of coal from this country. "The question of shortage for this year," said Dr. Garfield, "will depend upon whether the American demand has increased by more than the 10 per cent increase in production. If our industrial development, from the war and other causes, has grown beyond that then we must go short. We have no figures at hand to tell what that development has been."

The Fuel Administrator has announced a further classification of bituminous coal mines in several outlying districts allowing considerable increases in the prices as compared with those fixed in the President's original price-fixing order.

Anthracite coal dealers and operators controlling most of the country's supply held a meeting with Federal Fuel Administrator Garfield and his staff on Tuesday, to discuss the anthracite situation and arrange for co-operation in production and distribution.

A working committee of three will be designated among the dealers, to aid in collecting data which are to be put at the disposal of the Fuel Administration. Anthracite is being shipped at present in large quantities to the Northwest, New England and other parts of the country that particularly need it. Shipments to New England during the first eight months of 1917 were 665,704 tons greater than for the corresponding period last year, according to figures furnished the Fuel Administration by the Anthracite Bureau of Information.

Aggregate shipments for the first eight months of this year were 6,455,941. Last year they were 5,790,237. Shipments from the anthracite region have been going forward to New England for the past two months in 50-car trains at the rate of two trains or more a day. Because of the late spring, shipments of anthracite to the upper lake ports to September 1 were slightly less than up to the same time last year. The priority order by which a continuous flow of coal is going westward by water is expected to remedy this soon.

THE RAILWAYS OF HONDURAS.—The railway system of Honduras at the present time consists of 579 km. (359 miles) of line, including those belonging to the National Lines, the line from Puerto Cortes to Potrillos (operated by the state), the Vaccarro Railway (a privately owned line), the Tela Railway, the Cuyamel Fruit Company's line, and the Trujillo Railway.

National Association of Railway Commissioners

President Max Thelen of Association Discusses Railroad Problem and the Duty of Commissioners in War Time

THE 29th annual convention of the National Association of Railway Commissioners was held at Washington beginning October 16 with an attendance of representatives of the Interstate Commerce Commission and of 31 states. Max Thelen, of the California Commission, president of the association, presided.

Henry C. Hall, chairman of the Interstate Commerce Commission, delivered an address of welcome, following the usual custom, in which he referred to the changed conditions in the transportation business brought about by the war and urged the utmost co-operation among the regulating commissions and the carriers and shippers in solving the problems necessary to win the war as speedily as possible. He described the organization of the Railroad's War Board and said that the result of the co-operative action on the part of the railroads was immediately responded to by a similar spirit on the part of shippers. If the railroads had stood on their rights and attempted to act arbitrarily, he said, there never would have been produced such results as have been brought about by the cheerful getting together of both sides. A similar policy had been pursued by the Commission's Division of Car Service in co-operating with the Commission on Car Service, the Fuel Administration and the Director of Priority of Transportation, with the result that it has not been necessary for the Interstate Commerce Commission to issue any orders under the authority conferred by the Esch-Pomerene law.

The various interests have been able to work together in such a way that their action has been the result of a consensus of opinion as to what was best, and as a result the orders of the Commission of Car Service have met with almost unanimous and instant response from the individual railways because there has always been knowledge that if any of its orders were not complied with they might be followed up by mandatory orders of the Interstate Commerce Commission. This illustrates, Chairman Hall said, that the importance of the existence of power is not always shown by the use of that power; often the knowledge that it is there is sufficient. Referring to the activities of regulating bodies, he said that the necessity of winning the war bears upon all in their respectful official capacities and, in so far as is consistent with the laws under which they act, the state of war should be considered as a prime factor in whatever action is taken. He referred to the increased inefficiency of freight operation, brought about by the co-operation of shippers and carriers as an example to all and urged special efforts to compose differences before they reached the stage of formal litigation. He also reiterated the commission's former recommendations toward a greater degree of co-operation between the state and the federal commissions, saying that although there has been no legislation along these lines, the association, through the selection of a committee, might prepare the way for such co-operation during the war in such a way as to avoid any conflict of jurisdictions. Chairman Hall referred to the law passed by Congress last year giving the President power to take over the operation of railroads if necessary, saying that the power to commandeer the railroads has not been exercised, while the power to commandeer carriers by waters has been exercised. This power over the railroads, he said, may yet be exercised, but thus far all who have had to deal with the problems of railway transportation have worked together so harmoniously that the President has not seen the need of exercising his authority.

Max Thelen, president of the association, delivered the

opening address of the convention, in which he said in part:

THE DUTY OF THE STATE COMMISSIONS DURING AND AFTER THE WAR

"At this time, when individual action yields to collective patriotic endeavor, each member of the National Association of Railway Commissioners asks himself—What action can I take and what action can my commission take to serve the nation during the war, and what can I do now in preparation for the vital problems which will come after the war, so that they may be wisely and patriotically solved and so that the nation in the solution thereof may grow stronger, more efficient and more fit?

"It, of course, goes without saying that each commissioner pledges himself unreservedly to every service which his state and his nation may ask of him in the present emergency. We all desire to be of service, but to many of us the path of most effective service is not clear. In the hope of being able to translate our desire to help into terms of specific and definite action, I shall draw attention to certain steps which, in my judgement, the various state commissions can and ought to take to help the nation in the war.

"To assist in the solution of our serious car shortage problem, the state railroad and public service commissions have sent circular letters urging all shippers to co-operate with the railroads by prompt loading, by loading to full capacity and by prompt unloading of freight cars, by distributing empty cars into districts where needed, increasing the daily mileage of locomotives and freight cars, reducing the number of locomotives and freight cars awaiting repairs in shops, and other measures the railroads have patriotically assisted in securing greater efficiency of their limited transportation equipment. While the co-operation of the public authorities, the shippers and the railroads has produced gratifying results, the situation is still serious and threatens to become more acute during the remaining months of the year.

"The state commissions must render further service in the car shortage problem. Wherever we find in our states that extra fare or limited passenger trains are being run in excess of reasonable necessity, wherever we find that unnecessary trains of any character are being operated between competitive points, wherever we find that other unnecessary expenses are still being incurred by the railroads, it is the duty of the state commissions to take affirmative action, to draw the matter to the attention of the railroads and to urge them, not merely to authorize them, to eliminate the unnecessary service and expense so as to conserve their transportation efficiency. While we are at war, the American people do not need luxurious passenger service. In these matters the state commissions should be leaders and not followers.

"The permanent solution of the car shortage and other fundamental railroad problems are matters to which I shall hereinafter refer. Let us, however, at the present time take every emergency measure which can be of assistance, even though temporarily inconveniencing our people, so as to help win the war.

"So important do I regard the giving of direct and immediate assistance by the state commissions to help win the war that I recommend to this convention that it create a Special War Committee which shall be charged with the duty of conferring with the appropriate federal and state authorities and with each state commission and of giving advice

and suggestions as to what each commission can do affirmatively and constructively to help the nation in the present emergency."

Mr. Thelen referred to the applications of the steam railroads to the Interstate Commerce Commission and to the various state commissions to increase their freight rates 15 per cent, which, he said, were based largely on increased operating expenses due to the war, but he said it is a matter of gratification that concurrently with these increased operating expenses there have been such increases not only in gross revenues, but also in net revenues that it will presumably not be necessary for the steam railroads to press their applications where they have not already been dismissed. He then referred to the increases in net earnings in the early months of the year and said that, while there was a decrease for the first six months, the position of the railroads should be measured not by comparison with the record year of 1916, but by the increase of nearly \$155,000,000 in net earnings for the corresponding six months of 1915. While he considered the steam railroads in a condition of prosperity, he declared that many other public utilities have not enjoyed the increase in business which has come to the railroads and that the state commissions should give prompt and sympathetic consideration to their applications for higher rates.

Where applications of railroads for the reduction of elimination of service are reasonably necessary to increase efficiency, they should, he said, be granted, but reductions in necessary service to rural communities and other portions of the country should not be allowed while the carriers at the same time "continue to maintain expensive, not to say, luxurious and largely unnecessary service between competitive points for the purpose of securing business from their rivals.

Expenditures for additional railroad depots or for other new structures or extensions, he said, will, of course, not be ordered by the state commissions while the nation is at war unless absolutely necessary, but he resented the efforts of various public utility representatives to secure from commissions the enactment of formal resolutions that the commission will not order the railroads and other utilities to incur unnecessary expenditures during the war. Before these suggestions were made, he said, most of the state commissions had already decided to refrain from directing any public utility to incur substantial expenditures which can fairly and reasonably be deferred until after the war.

Discussing the railroad problem, Mr. Thelen continued in part as follows:

THE RAILROAD PROBLEM

"The railroad problem in the United States has permanently moved beyond the ownership and operation of the railroads as disconnected entities by private companies. The issue now and hereafter is an issue between consolidated operation of our railroads in private ownership and their unified operation directly by the people through government ownership. National exigency, lofty patriotism, and perhaps a realization that government operation was immediately impending unless private operation met the emergency, prompted the railroads of the United States, immediately after the declaration of war, to operate as a single consolidated American system and in doing so, to eliminate a portion of the waste and inefficiency which were pointed out by the Interstate Commerce Commission in the Five Per Cent Advance Rate Case and which for years have been recognized and commented upon by state railroad commissioners and other students of railroad problems. But what is now being accomplished is only a small part of what must be done if our railroads are to measure up to our new standards of national efficiency.

"Who has not seen passenger and other trains constantly running half empty over two, three or four parallel rail-

road tracks, between the same communities? Who has not seen in our large cities splendidly equipped passenger and freight offices of competing railroad systems, side by side, on the same street, with hosts of competing passenger solicitors, freight solicitors, and other employees, all striving to take business away from the competing railroads? Who has not seen luxurious and unnecessary passenger trains operated by rival railroads at great expense between competitive points for the purpose of attracting freight business from other railroads operating between the same points? Who has not seen in multitudinous forms the results of our laissez faire policy which has permitted our railroads to develop duplications of facilities and of service which have resulted and still result in enormous annual losses to the nation? Who has not observed the increasing difficulty or our railroads in securing at reasonable interest rates or at all the new capital imperatively necessary for extensions and betterments? Who has not observed the unsound financial structures of many of our railroads, leading to bankruptcy proceedings as inevitably as the inexorable laws of time? I am not now speaking of causes but only of the facts which are patent to all.

"These conditions may be summarized as follows:

- "1. Duplication of facilities.
- "2. Duplication of service.
- "3. Duplication of operating expenses.
- "4. Difficulty in securing necessary new funds.
- "5. Unsound financial structures.

"What the railroads are now doing is being patriotically done and deserves and is receiving the unstinted praise and commendation of all American citizens. But what they are now doing in seeking to ameliorate car shortage is merely a scratching of the surface. The other conditions to which I have referred must be remedied if our railroad transportation system is to substitute efficiency and financial stability for inefficiency and weakness and if it is to measure up to the standard of national efficiency which the people of the United States will imperatively demand after the war.

"The question to which thoughtful students of public affairs have been and are now giving attention and to which we as public officials engaged in the supervision and regulation of railroads must give consideration is—Will these necessary changes be brought about under private consolidated management of the railroads or are we to be driven for their solution to government ownership?

"These problems and others are included in the exhaustive program of the Joint Congressional Committee of the Senate and the House of Representatives, commonly known as the Newlands committee.

"With the exception of federal control over the issue of securities, the remedies which have been proposed by the railroads to the Newlands committee are, in my opinion, merely patchwork. They will not cure the matters to which I have referred, which matters are fundamental. Federal incorporation of the railroads is in itself merely a shifting of the machinery of corporate organization and control and as proposed by the railroads will cure none of the fundamental conditions from which the railroads are suffering.

"One of the questions which is included in the program of the Newlands committee is the comparative worth and efficiency of government regulation and control as compared with government ownership and operation.

"The last convention of this association authorized the appointment of a special committee on public ownership and operation, with instructions to consider and report at this convention on the question of public ownership and operation as contrasted with private ownership and operation of public utilities. This committee will present to the convention a report showing its understanding and interpretation of the present-day trend of the changing relations between the public utilities and the people and suggesting to

this association a general outline of the subject, with recommendations indicating along what lines further investigations and studies should be made.

"The subject is one of increasing importance. In my opinion, this association can do no greater constructive work than to ascertain and report the facts in connection with the private and the public ownership and operation of public utilities, so that if this nation should hereafter find it necessary to resort to public ownership and operation of our railroads and other public utilities, it may have at hand a solid foundation of fact on the basis of which it can enter on such task wisely and successfully.

FEDERAL RAILROAD VALUATION

"The Interstate Commerce Commission is at the present time engaged in the most gigantic public utility valuation in the world's history. I refer to its ascertainment of the facts entering into the value of the property of the railroads of the United States, generally known as the federal railroad valuation.

"The Interstate Commerce Commission, through its Division of Valuation, has been hard at work and has made substantial progress. The valuation will be of tremendous importance to the people of the United States when our people finally enter upon the scientific and comprehensive control over the issue of railroad securities and will be of inestimable value if it hereafter becomes necessary to have the government itself take over and operate the railroads.

"The carriers seem to be generally opposed to the ascertainment of the facts by the federal government. The Boston American of August 23, 1917, is authority for the statement that the Advisory Commission of the Council of National Defense, consisting largely of representatives of the railroads and affiliated interests, had advised the Council of National Defense to have the valuation of the railroads suspended during the war. That an effort to suspend or stop the valuation was made is generally known. The effort thus far has been unsuccessful.

"There is nothing in the present emergency which would justify the suspension of the valuation work. For the purpose of taking intelligent action hereafter, the people of the United States are entitled to know, as promptly as possible, the facts with reference to the value of our railroad properties. The valuation work must go on.

"I recommend to this convention that the work of its Valuation Committee be continued and to the various states of the union that they continue, to the extent of their respective abilities, the unselfish and patriotic support which they have heretofore given to this association and to its valuation committee in this work.

"Within the last few months, the railroads have resumed their campaign of publicity against the state and federal commissions. I have purposely said nothing on this subject in my address and I do not propose now to do so. While this nation is at war is not a proper time for the railroads to again enter upon their attacks. Rather should we all unite our efforts and present a common front, so that in harmonious, united action the nation can be most effective in the present contest."

OTHER REPORTS

Reports were presented by 31 standing committees as follows: Executive Committee, Express and Other Contract Carriers by Rail, Safety of Railroad Operation, Railroad Service Accommodations and Claims, Grade Crossings and Trespassing on Railroads, Railroad Rates, Statistics and Accounts of Railroad Companies, Car Service and Demurrage, Public Utility Rates, Service of Public Utility Companies, Safety of Operation of Public Utility Companies, Statistics and Accounts of Public Utility Companies, Valuation, Capitalization and Intercorporate Relations, State and Federal Legislation, Publication of Commissions' Decisions, and Special Committee, Public Ownership and Operation.

The Committee on Safety of Railroad Operation, C. C. McChord, of the Interstate Commerce Commission, chairman, presented a résumé of the authority and activities of the state commissions which have reported to it on this subject and presented the following recommendations, believing that proper action upon each of them will result in material increase in the safety of railroad operation:

(1) That the inspection of railroad tracks and track equipment by all the commissions having jurisdiction with respect thereto be continued and extended.

(2) That the use of the block system should be made compulsory.

(3) That steps be taken to secure uniformity of operating rules on the railroads of the United States.

The Committee on Grade Crossings and Trespassing, J. B. Walker, of the New York Commission, chairman, presented a discussion of grade crossing reforms in the various states in a series of recommendations on the trespassing situation, as follows:

(1) The passage of such federal legislation as may be necessary to eliminate trespassing on railroad rights-of-way. We believe this would be best accomplished by a statute which would be enforceable not alone by the federal authorities but by state and local authorities as well. We believe that to make this statute effective its violation should carry a suitable punishment for the offender either by fine or imprisonment or both.

(2) That the commission of each state give wide publicity to the statistics covering trespass accidents and lose no opportunity to point out that trespass laws are intended to protect human life and limb rather than property rights.

(3) That the railroad companies continue the anti-trespass campaign they have inaugurated and that the state commissions render them all possible assistance in carrying them out.

The Committee on Statistics and Accounts, Arthur A. Lewis, of the Washington Commission, chairman, presented a recommendation that a committee consisting of one member, respectively, of the statistical or accounting department of each commission, the Interstate Commerce Commission and the Association of American Railway Accounting Officers, be appointed by the president of this association for the purpose of preparing and submitting to the next annual convention a uniform annual report schedule.

The Special Committee on Public Ownership and Operation, E. O. Edgerton, of the California Commission, chairman, agreed that no report should be written or can be written at this time with definite conclusions or definite recommendations for or against public ownership. The committee was agreed that any recommendation on so important a question should not be a matter of opinion merely adding argument to the already endless controversy, but should be based on the most exhaustive and thoughtful study of all phases of the problem. It recommended that the National Association appoint a permanent committee to deal with this question to represent the association, if necessary, before governmental or other bodies, if prior to the end of the coming year important action should be taken by the government in this direction, and to make a report to the national association at its next meeting.

Samuel Rea, president of the Pennsylvania Railroad, addressed the members at a banquet on Wednesday evening. An abstract of this address will be found on another page of this issue.

EMBARGO ON CANADIAN RAILS.—An order-in-council has been passed at Ottawa, Can., under the War Measures Act, prohibiting the exportation of steel rails from Canada to countries other than the United Kingdom, British possessions and protectorates.

RAILWAY OPERATING EFFICIENCY

How each freight car and locomotive in the service of the railroads of the United States has been doing its bit in the way of increased service to help win the war is clearly shown in the monthly reports just received by the Railroads' War Board of freight operations during the month of July and in a similar compilation giving the combined results for the three months April, May and June, the second quarter of the year.

With only 1.3 per cent more locomotives in service and

an increase of 18.7 per cent in the efficiency of each locomotive. The revenue ton miles per car increased 17.5 per cent.

This was accomplished, the report shows, by increasing, the number of tons of freight to each train from 617 to 681, or 10.4 per cent, and loading an average of 2.7 tons more, or 11.1 per cent, in each car, while the average mileage run by each locomotive per day was increased 4.4 miles or 6.8 per cent. The average mileage per car per day increased 1.9 or 7.2 per cent. While the percentage of empty car mileage was increased slightly, 3.9 per cent, the average number of cars in shop or awaiting shop was reduced 9.1 per cent and

MONTHLY REPORT OF FREIGHT OPERATION OF STEAM RAILWAYS, JULY, 1917

Item	United States				Eastern District			
	1917	1916	Increase or decrease		1917	1916	Increase or decrease	
			Amount	Per cent			Amount	Per cent
Freight train-miles	53,483,629	49,311,357	4,172,272	8.5	22,127,436	21,116,751	1,010,685	4.8
Loaded freight car-miles	1,342,580,804	1,246,433,820	96,146,984	7.7	588,349,818	566,875,846	21,473,972	3.8
Empty freight car-miles	635,003,604	556,588,893	78,414,711	14.1	286,348,397	272,671,828	13,676,569	5.0
Total frt. car-miles—loaded and empty	1,977,584,408	1,803,022,713	174,561,695	9.7	874,698,215	839,547,674	35,150,541	4.2
Freight locomotive-miles	64,539,455	59,672,105	4,867,350	8.2	29,759,120	28,306,230	1,452,890	5.1
Revenue ton-miles	33,434,368,526	27,809,430,998	5,624,937,528	20.2	16,586,674,317	14,184,885,284	2,401,789,033	15.5
Non-revenue ton-miles	2,967,002,099	2,599,605,754	367,396,345	14.1	936,839,600	784,092,584	152,747,016	19.5
Ave. No. of freight locomotives:								
In service	30,277	29,888	389	1.3	12,875	12,666	209	1.7
In shop or awaiting shop	4,122	4,460	d 338	d 7.6	1,801	1,910	d 109	d 5.7
Ave. No. of freight cars:								
In service	2,256,621	2,204,902	51,719	2.3	1,175,505	1,154,731	20,774	1.8
In shop or awaiting shop	135,831	144,478	d 8,647	d 6.0	74,281	76,460	d 2,179	d 2.9
Home	102,862	116,757	d 13,895	d 11.9	55,790	61,449	d 5,659	d 9.2
Foreign	32,969	27,721	5,248	18.9	18,491	15,011	3,480	23.2
Tons per train	681	617	64	10.4	783	709	74	10.4
Tons per loaded car	27.1	24.4	2.7	11.1	29.4	26.4	3.0	11.4
Ave. miles per locomotive per day	68.8	64.4	4.4	6.8	74.6	72.1	2.4	3.5
Average miles per car per day	28.3	26.4	1.9	7.2	24.0	23.5	0.5	2.1
Per cent of empty car-miles	32.1	30.9	1.2	3.9	32.7	32.5	0.2	0.6
Per cent of frt. locos. in or await. shop	13.6	14.9	d 1.3	d 8.7	14.0	15.1	d 1.1	d 7.3
Per cent of frt. cars in or await. shop	6.0	6.6	d 0.6	d 9.1	6.3	6.6	d 0.3	d 4.6
Revenue ton-miles:								
Per locomotive	1,104,283	930,455	173,828	18.7	1,272,751	1,119,918	152,833	13.6
Per freight-car	14,816	12,613	2,203	17.5	13,940	12,284	1,656	13.5
Average miles operated—single track	220,054.30	219,734.97	319.33	0.1	56,032.46	56,222.76	d 190.30	d 0.3

Item	Southern District				Western District			
	1917	1916	Increase or decrease		1917	1916	Increase or decrease	
			Amount	Per cent			Amount	Per cent
Freight train-miles	8,532,367	7,405,757	1,126,610	15.2	22,823,826	20,788,849	2,034,977	9.8
Loaded freight car-miles	205,320,169	176,659,282	28,660,887	16.2	548,910,817	502,898,692	46,012,125	9.1
Empty freight car-miles	104,371,329	83,061,379	21,309,950	25.7	244,283,878	200,855,686	43,428,192	21.6
Total frt. car-miles—loaded and empty	309,691,498	259,720,661	49,970,837	19.2	793,194,695	703,754,378	89,440,317	12.7
Freight locomotive-miles	9,540,951	8,225,755	1,315,196	16.0	25,239,384	23,140,120	2,099,264	9.1
Revenue ton-miles	5,141,893,352	4,126,779,203	1,015,114,149	24.6	11,905,800,857	9,497,766,511	2,408,034,346	25.4
Non-revenue ton-miles	529,036,877	402,632,068	126,404,809	31.4	1,501,125,622	1,412,881,102	88,244,520	6.2
Ave. No. of freight locomotives:								
In service	4,896	4,863	33	0.7	12,506	12,359	147	1.2
In shop or awaiting shop	620	640	d 20	d 3.1	1,701	1,910	d 209	d 11.0
Ave. No. of freight cars:								
In service	279,014	276,158	2,856	0.8	802,102	773,413	28,689	3.7
In shop or awaiting shop	15,081	18,555	d 3,474	d 18.7	46,469	49,463	d 2,994	d 6.1
Home	11,645	15,764	d 4,119	d 26.1	35,427	39,544	d 4,117	d 10.4
Foreign	3,436	2,791	645	23.1	11,042	9,919	1,123	11.3
Tons per train	665	612	53	8.7	587	525	62	11.8
Tons per loaded car	27.6	25.6	2.0	7.8	24.4	21.7	2.7	12.4
Average miles per locomotive per day	62.9	54.6	8.3	15.2	65.1	60.4	4.7	7.8
Average miles per car per day	35.8	30.3	5.5	18.2	31.9	29.4	2.5	8.5
Per cent of empty car-miles	33.7	32.0	1.7	5.3	30.8	28.5	2.3	8.1
Per cent of frt. locos. in or await. shop	12.7	13.2	d 0.5	d 3.8	13.6	15.5	d 1.9	d 12.3
Per cent of frt. cars in or await. shop	5.4	6.7	d 1.3	d 19.4	5.8	6.4	d 0.6	d 9.4
Revenue ton-miles:								
Per locomotive	1,050,223	848,608	201,615	23.8	952,007	768,490	183,517	23.9
Per freight-car	18,429	14,911	3,518	23.6	14,843	12,280	2,563	20.9
Average miles operated—single track	37,207.73	37,103.21	104.52	0.3	126,814.11	126,409.00	405.11	0.3

d Decrease

only 2.3 per cent more freight cars than in July, 1916, railroads operating 220,054 miles of line in July, 1917, handled 20.2 per cent more ton miles of revenue freight. In other words, the 30,277 freight locomotives in service in July handled the equivalent of 33,434,368,526 tons of revenue freight one mile, or an average of 1,104,283 ton miles for each locomotive, as compared with 930,455 in July, 1916,

the average number of locomotives in shop or awaiting shop was reduced 8.7 per cent.

For the three months' period, for 227,156 miles operated, the increase in revenue ton miles was 17.6 per cent, while the increase per locomotive was 16.1 per cent and per car was 15.3 per cent.

The figures for July are shown in the table.

Automatic Straight Air Brake System

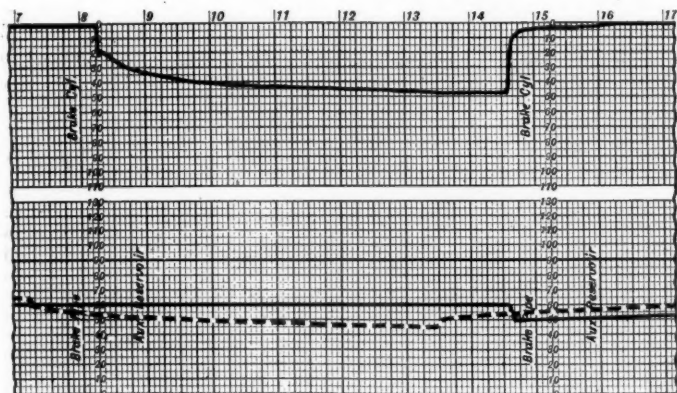
Description of the Design and Operation of a New Triple Valve for Passenger and Freight Equipment

A NEW air brake system has recently been perfected by the Automatic Straight Air Brake Company, 14 Wall street, New York, for freight and passenger equipment, which contains many new and interesting features of operation. The purposes of this brake are to give rapid serial action to the brakes throughout a train, to maintain a constant and uniform brake cylinder pressure regardless of piston travel, to permit a variation of brake cylinder pressure at the will of the engineman, to provide a proper and quick release of the brakes for any brake pipe reduction, to

The triple valve is made up of disk valves and diaphragms, no slide valves or pistons being used.

Due to its construction and operation this brake has the characteristics of a straight air brake and at the same time is automatically operated. The straight air features are obtained through the fact that with every application of the brakes air is exhausted from the brake pipe under each car. In case of a service application air from the brake pipe is exhausted into the brake cylinder and in case of an emergency application the air from the brake pipe is exhausted to the atmosphere. In the first case the air is not wasted but is used to build up the pressure in the brake cylinder in conjunction with the supply of air from the service reservoir. In both cases the rapidity of serial action is increased due to the fact that the brake pipe pressure is reduced locally at each car.

The design of the triple valve is such that when fully charged the pressure in the brake pipe acting on the underside of a diaphragm balances the pressure in the auxiliary reservoir acting on the upper side. A reduction in brake pipe pressure causes the auxiliary reservoir pressure to force the diaphragm downward admitting air to the brake cylinder from the brake pipe and service reservoir. The air in the brake cylinder acts on a second diaphragm which is connected to the first and which is of one-half its area. The pressure in the auxiliary reservoir remains unbalanced forcing the diaphragm down until the force exerted by the brake pipe pressure on the underside of this diaphragm plus force exerted by the air in the brake cylinder on its diaphragm exceeds it. The diaphragm will then be raised and the supply of air to the brake cylinder cut off. Thus it will be seen



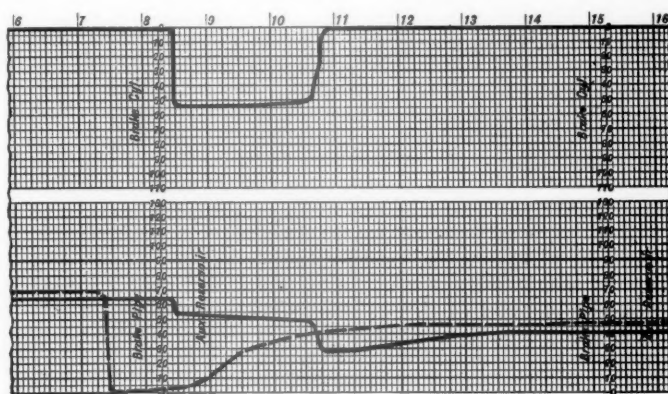
Service Application of the Brakes with Quick Release

The top curve represents brake cylinder pressure, the full line in the lower set of curves represents the pressure in the auxiliary reservoir, while the dash line shows the pressure in the brake pipe. The pen indicating the brake pipe pressure is set a distance of one minute back of the pens indicating the brake cylinder and auxiliary reservoir pressures. The above curves show that as the brake pipe pressure is reduced, the brake cylinder pressure of 20 lb. is obtained at once, which is increased on further reduction of the brake pipe pressure to about 50 lb., the pressure in the auxiliary reservoir remaining constant. With the building up of the brake pipe pressure, a small amount of air from the auxiliary reservoir is released to the brake pipe to hasten the release, the rapidity of release being indicated by the brake cylinder curve.

provide for a full emergency application of the brakes at any time, to provide a graduated or quick release as desired, and to provide an economical use of air.

This brake system provides a quick action passenger brake, one brake cylinder being used for a service application and two brake cylinders for an emergency application of the brakes. As the triple valve is capable of compensating for varying volumes in brake cylinders, a second brake cylinder can be added to existing freight equipment for empty and load braking, the braking system retaining at the same time all of its functions and principles.

The brake is operated by the engineman in the same manner as is common with present day practice. The equipment can be used interchangeably with other existing equipment. The main features of this new brake are found in an entirely new triple valve with its auxiliary, service and quick action reservoirs. The auxiliary reservoir is of the same volume as that ordinarily used, the service reservoir has a volume of 2,100 cu. in. and the quick action reservoir a volume of 200 cu. in., which with an additional volume due to brake pipe connections, gives an increase in volume of about 2,300 cu. in. per car on 10-in. freight equipment. The service reservoir is used for service and emergency applications of the brake, the auxiliary reservoir is used for an emergency application of the brake and for a quick release of the brake in contrast to a graduated release. The quick action reservoir is used only in making an emergency application of the brakes.



Emergency Application of the Brakes

In this case the brake pipe pressure was reduced to zero, giving an instantaneous brake cylinder pressure of 55 lb. with an accompanying decrease in auxiliary reservoir pressure. At release more air is taken from the auxiliary reservoir to aid the release as described under the quick release operations, the brake being released in about 10 seconds. Due to the construction of the triple valve, the auxiliary reservoir pressure is then raised, through the charging port, with the brake pipe pressure, the difference in the amount being due to the spring used on the auxiliary reservoir diaphragm. This record was obtained from car 61 in the 100-car test rack described in the text.

that the brake cylinder pressure bears a direct relation to the brake pipe reduction and is not affected by the brake piston travel or brake cylinder leakage. By regulating the brake pipe pressure, any brake cylinder pressure may be obtained.

Each triple valve is provided with means for making a graduated or quick release. The graduated release is obtained by building up the brake pipe pressure from the locomotive. The quick release feature is obtained by raising the

brake pipe pressure three pounds, at which time auxiliary reservoir air is released to the brake pipe under each car.

Interesting features of this brake are that service applications can be varied at the will of the engineman by his regulation of the brake pipe pressure without the necessity of releasing the brakes before a re-application when operating with the graduated release, and the fact that the auxiliary reservoir maintains a reserve supply for a full emergency application, regardless of the number of service applications made. The triple valve is of such a design that after a train has once been charged, an emergency application will automatically be made if for any reason the brake pipe pressure should be reduced to zero.

This company has been making a series of exhibition tests on a 100-car test rack composed of 51 A S A brake equipments and 49 brake equipments in common use today, which were attended by between 200 and 300 railroad representatives. The equipments have been distributed in multiples of five throughout the train, that is, five A S A equipments, five other equipments, etc., with the hundredth car being an A S A equipments. These tests have shown that the time between the application of the brakes on the first car and the hundredth car with a service application is about 14 seconds, and with an emergency application about 8 seconds. Records taken on trainographs of a service application with quick release,

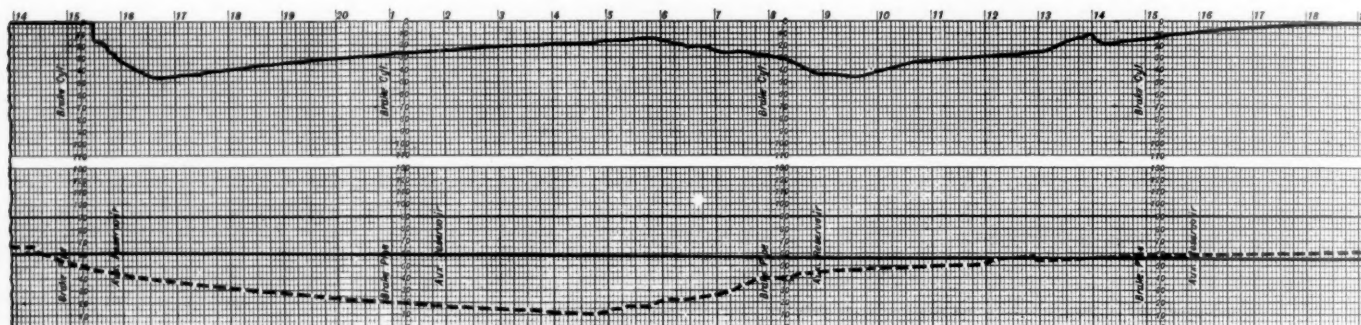
by the maintaining valve when open, to pipe 41c and on top of the valve 77. The air passing through valve 55 passes through pipe 10 to chamber 85 of the change-over valve and from there through valve 95 and hollow stem 94 to the service reservoir. From chamber 85 the air also passes up through ports 14 into chamber 90 above the diaphragm 88. The air passing through valve 55 also passes to chamber 47 above the diaphragm 43. As the pressure in chamber 47 plus the pressure caused by spring 50 equalizes with the pressure in chamber 40a, the diaphragm 43 will be depressed, allowing valves 71 and 55 to be closed by their springs.

Emergency Section.—The air in pipe 1a passes to chamber 39a past the clearance 44 into chamber 40 above the diaphragm 39, keeping the valves 60 and 60a closed. This pressure also acts on valve 46, keeping it closed. From chamber 39a the air also passes through the port 68 to the chamber 81 directly through port 74 and to the quick action reservoir.

SERVICE BRAKE APPLICATION

The service application of the brake is made in the usual way by reducing the brakepipe pressure. This reduces the pressure in chamber 2 of the service section and pipe 1a lead to the emergency section.

Service Section.—The reduction in pressure in chamber 2



Performance of the Brake Under Conditions of a Gradually Depleted Brake Pipe, Showing the Performance Under Graduated Release

With the reduction in brake pipe pressure, the brake cylinder pressure increases until both are about 45 lb. From that point a further reduction in brake pipe pressure will cause a reduction in brake cylinder pressure, and in no case below this point will the brake cylinder pressure be less than the brake pipe pressure. A prolonged reduction of the brake pipe pressure was made purposely to disclose this fact. As the brake pipe pressure increases, the brake cylinder pressure increases until a pressure of 45 lb. is obtained in both the brake cylinder and brake pipe. From that point on, the graduated release goes into operation and with a further increase in brake pipe pressure, the brake cylinder pressure will be reduced. It will be noted that the auxiliary reservoir pressure has not changed.

a service application with graduated release and an emergency application are shown in the illustrations.

The following, to be used in connection with a diagrammatic illustration of the triple valve, gives an outline of the operation of the A S A triple valve:

CHARGING THE TRIPLE VALVE

The air from train line 1 passes into chamber 2 of the service section and into pipe 1a leading to the emergency section.

Service Section.—The air pressure in chamber 2 acts on the diaphragm 3, raising it until the valve 9 is uncovered. This permits the air to pass through a small port 18 into chamber 4 and the auxiliary reservoir. The spring 7c exerts a force equivalent to three pounds of air and as soon as the pressure in chamber 4 is within three pounds of the pressure in chamber 2, the valve 9 will close.

The air from chamber 2 also passes through port 12 into the hollow stem 6 past the non-return valve 32a into chamber 30 and on top of valve 32.

From chamber 2 the air also passes through the passage 42 to chamber 40a where it raises the diaphragm 43 which lifts the left hand end of lever 65, opening valves 71 and 55. The air passing through valve 71 passes through pipe 68

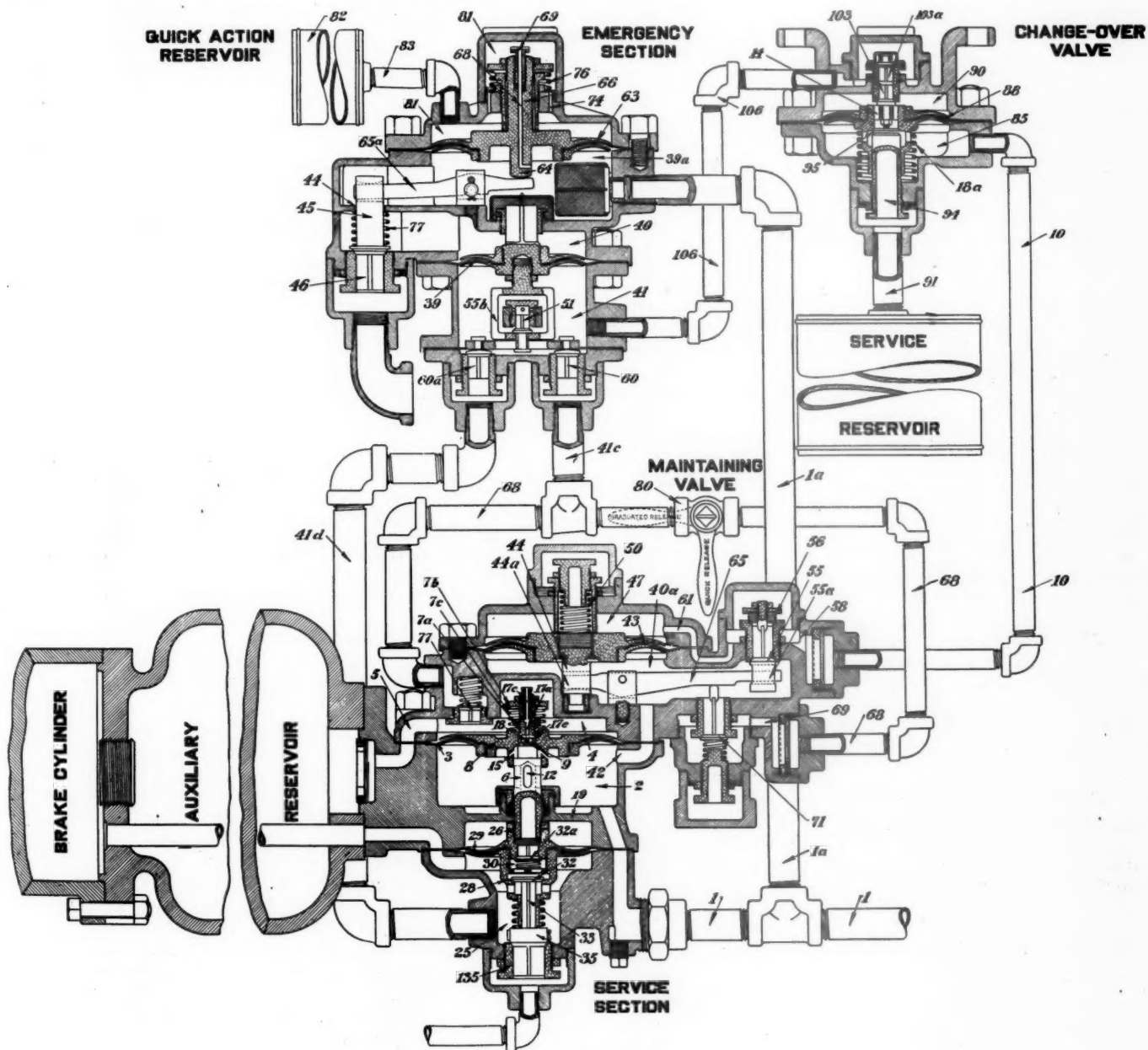
permits the pressure in the auxiliary reservoir and chamber 4 to depress the diaphragm 3. This lowers the valve stem 6 and with it diaphragm 29, valve cage 28 and valve 32 and with it valve 35 which is rigidly connected to 32. As valve 35 seats on the cage 135, the opening between the brake cylinder and chamber 25 with the atmosphere is closed. The cage 28 drops away from the valve 32, permitting the air in chamber 30 to pass into chamber 25 which is connected directly to the brake cylinder, thus charging the cylinder. Air also flows from chamber 40a and from the service reservoir through the valve 95, pipe 10 and valve 55 to chamber 2, thus augmenting the air supply in chamber 2 which passes to the brake cylinder.

As the force exerted by the air pressure in chamber 25 on the diaphragm 29 plus the force exerted by the air pressure in chamber 2 on diaphragm 3 exceed the force exerted by the air pressure in chamber 4 plus the pressure of spring 7c, the spindle 6 will be raised with the valve cage 28, seating valve 32, cutting off the supply of air to the brake cylinder. Since the area of diaphragm 29 is about one-half that of diaphragm 3, the pressure in chamber 25 to provide equilibrium will be about twice the reduction made in chamber 2. If for any reason the pressure should leak off from the brake cylinder, the forces will again become unbalanced and

valve 32 will again be open until equilibrium is once more established. In this way the brake cylinder pressure will always remain a certain definite function of the brake pipe for each brake pipe reduction. The air pressure in chamber 47 will be reduced with the pressure above the valve 55, but as it with the spring 50 is greater than the pressure in chamber 40a, the diaphragm 43 will always remain down during the service application of the brake.

Emergency Section.—The reduction of the brake pipe pressure causes a reduction in chambers 39a and 40 without operating any of the parts. The reduction is so gradual

sure in chamber 2, diaphragm 3 and with it valve stem 6, diaphragm 29 and valve cage 28 will be raised, this will lift valve 35 from its seat, permitting the pressure from the brake cylinder to release to the atmosphere, until the pressure in chamber 25 has been reduced sufficiently to re-establish the balance destroyed by the increase in brake pipe pressure. At this time the service section will again move to lap position. In this way the release may be graduated in as many steps as desired, the full release being obtained when the brake pipe pressure has been restored sufficiently to balance the auxiliary reservoir pressure. In



Triple Valve for the Automatic Straight Air Brake System

that the pressure from 81 will be relieved through passage 69 without operating diaphragm 63.

RELEASING THE BRAKES

Graduated Release.—To obtain the graduated release the maintained valve 80 is closed, thus cutting out the use of the valve 77 and the auxiliary reservoir pressure. With the service section in lap position, that is, with the pressures in chambers 25 and 2 balancing the auxiliary pressure in chamber 4, by raising the brake pipe pressure and the pres-

sure in chamber 2, diaphragm 3 and with it valve stem 6, diaphragm 29 and valve cage 28 will be raised, this will lift valve 35 from its seat, permitting the pressure from the brake cylinder to release to the atmosphere, until the pressure in chamber 25 has been reduced sufficiently to re-establish the balance destroyed by the increase in brake pipe pressure. At this time the service section will again move to lap position. In this way the release may be graduated in as many steps as desired, the full release being obtained when the brake pipe pressure has been restored sufficiently to balance the auxiliary reservoir pressure. In

Quick Release.—To obtain the quick release, the maintaining valve 80 is opened, as shown by the full lines in the illustration. With the increase in pressure in chamber 2, the performance of the service section will be as described above. The pressure in chamber 40a will be built up, raising diaphragm 43 and with it the left hand end of lever 65, which will open valve 71 a short time ahead of valve

55 on account of the clearance between the right hand end of the lever and the bottom of the slot in the valve body 55a. Opening valve 71 permits air from the auxiliary reservoir which is at a higher pressure than the air in chamber 40a to pass forward through valve 77, pipe 68, through valve 71 into chamber 40a, thus rapidly increasing the pressure in chamber 2 and insuring a quick release of the air pressure from the brake cylinder. With the brakes released the system will be recharged as described above.

EMERGENCY APPLICATION

There are no movements of the parts in the emergency section during charging, service, lap, and release operations. The moderate service brake pipe reductions permit the air to flow from the quick action reservoir 82 to the train pipe through the restriction screw 69 at the same rate as the brake pipe reduction is taking place, thereby maintaining equal pressures on both sides of diaphragm 63.

To obtain an emergency application, a rapid and prolonged brake pipe reduction is made. This causes the service section to assume service position quickly and reduces the pressure in chamber 39a of the emergency section faster than the pressure in the quick action reservoir 82 can be reduced through the restriction screw 69.

The pressure in chamber 81 above diaphragm 63 will then be higher than the pressure in chamber 39a, with the result that diaphragm 63 will be forced down. Stem 64, moving with the diaphragm, will depress the inner end of the fulcrum lever 65a and the left end will be raised, thereby raising the brake pipe exhaust valve 46, and venting the brake pipe pressure direct to the atmosphere.

The sudden reduction of brake pipe pressure quickly reduces the pressure in chamber 40a of the service section, thereby opening the valve 55 and causing a corresponding reduction in chamber 85 of the change-over valve through pipe 10. The pressure in chamber 85 of the change-over valve will then be reduced faster than the service reservoir pressure can flow through the restricted opening of valve 95, and as the upper chamber 90 is in direct communication with the service reservoir through ports 14, the high service reservoir pressure above diaphragm 88 forces the diaphragm down. This movement closes valve 95 and opens valve 103. The closing of valve 95 seals the service reservoir from the brake pipe, and the opening of valve 103 releases the service reservoir to chamber 41 of the emergency section valve 103a and through pipe 106.

This action occurs instantly and diaphragm 39 is raised by the decreasing brake pipe pressure, in chamber 40, and the increasing service reservoir pressure in chamber 41, thereby raising the yoke 55b. The upward movement of the yoke closes vent valve 51 and opens valves 60 and 60a. The opening of valve 60 releases the auxiliary reservoir to chamber 41 through pipe 41c. From chamber 41 the air from both the service and auxiliary reservoirs flows past valve 60a through pipe 41d to chamber 25 and the brake cylinder.

The operation of the parts just described quickly reduces the brake pipe pressure, and assures a quick and positive emergency application of the brakes throughout the train.

Valve 46 will remain open until the entire brake pipe pressure has been reduced sufficiently to assure an emergency application. The length of time depends upon the time required to vent the pressure in chambers 81 and 82, above diaphragm 63, to chamber 39a. This is determined by the size of the opening through the restriction screw 69. When the pressure in chamber 81 has been reduced to an equality with that in chamber 39a, spring 76 raises diaphragm 63 and spring 77 closes valve 46.

A release of the brakes after an emergency application is affected by raising the brake pipe pressure above the

pressure in chamber 4 which, in emergency, is equal to brake cylinder pressure. When the pressure in the brake pipe and in chambers 2 of the service section and 40 of the emergency section is raised above the equalized pressure in chambers 4 and 41, diaphragm 39 will be depressed, closing valves 60 and 60a, and opening vent valve 51. This releases the pressure in chamber 41 to passage 61 and the atmosphere, and the upward movement of diaphragm 3 opens exhaust valve 35, releasing the brake cylinder pressure to the atmosphere.

When the brake pipe pressure has been raised in chamber 85 of the change-over valve above the service reservoir pressure in chamber 90, diaphragm 88 will be raised to its normal position in which it is held by spring 18, and the service reservoir will again be charged.

Should an emergency application be desired following a service application, and service reservoir and brake pipe pressures are below the emergency brake cylinder pressure, valve 103a will prevent the emergency brake cylinder pressure from returning to the service reservoir.

TRAIN ACCIDENTS IN JULY¹

The following is a list of the most notable train accidents that occurred on the railways of the United States on the month of July, 1917:

Collisions					
Date	Road	Place	Kind of accident	Kind of train	Kil'd Inj'd
7.	Louisville & N.	Cave City.	bc	F. & F.	1 6
11.	Boston & A.	N. Wilbraham.	xc	F. & F.	0 3
14.	Staten Island	St. George.	rc	P. & F.	0 1
16.	Louisville & N.	Nashville.	rc	F. & F.	1 0
16.	Southern Pacific	Rosamond.	xc	P.	0 2
17.	Chicago R. I. & P.	Peoria.	xc	P.	2 4
†28.	Erie	Passaic Junc.	rc	F. & F.	1 4
29.	Balt. & Ohio	Eureka, W. Va.	bc	P. & F.	1 3

Derailments					
Date	Road	Place	Cause of derailment	Kind of train	Kil'd Inj'd
1.	Southern	Toccoa.	.....	P.	.. ..
5.	Balt. & Ohio	Shippensburg.	d. track	P.	1 1
8.	Phila. & Reading	Granogue.	unx	P.	0 14
8.	Nash. C. & St. L.	Dalton.	unx	P.	0 22
†10.	Boston R. B. & L.	Winthrop.	.....	P.	1 8
†17.	Southern	Caldwell's.	malice	P.	2 5
†18.	Texas & Pacific	Victoria.	.....	P.	1 5
18.	Louisiana & N. W.	Homer.	d. track	P.	0 14
20.	Atlantic C. L.	Hope Mills.	d. track	P.	0 8
28.	Houston & T. C.	Bryan.	.....	P.	1 2

Other Accidents					
Date	Road	Place	Kind of accident	Kind of train	Kil'd Inj'd
28.	Penn.	Edgewater Park.	fire	F.	.. ..
30.	Central N. J.	Galilee.	fire	P.	1 1

The trains in collision near Cave City, Ky., on the 7th were northbound freight No. 74, second section, and southbound freight No. 15. Both engines and 10 cars were wrecked. One fireman was killed and six trainmen were injured. The cause of the collision was the overlooking of the schedule of train No. 15 by the men in charge of the northbound train.

The trains in collision near North Wilbraham, Mass., on the 11th were eastbound freights. The leading train was in charge of Conductor Carpenter, with engine 1203; it was moving slowly from a siding to the main track and was run into at the side by the following train. One locomotive and 15 cars were wrecked. One engineman, one fireman and one brakeman were slightly injured. The collision occurred about 4:25 p. m. Carpenter's train had been standing on a siding. After a passenger train went by, Carpenter, who was out ahead of his train, said he looked back along the track, which is straight for two miles, saw

¹Abbreviations and marks used in Accident List: bc, Rear collision—bc, Butting collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—unx, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc, obst., Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P, or Pass., Passenger train—F, or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

nothing coming, and signalled to come ahead. He said he heard a sudden shrill whistle and suddenly a fast freight (engine 1020) loomed up. All hands then tried to stop, but the front end of 1203 projected eight or nine inches over the main track. It appears that Carpenter had opened the switch after the other freight train had passed the last preceding block signal and then did not wait a sufficient time to see if there were a train in the block, approaching. In the collision engine 1020 hooked the 1203 just back of the cylinder and dragged it out on the main line. The 1020 glanced from the heavier 1203 and turned over on its side; and the leading cars of its train piled up, leaving the 1203 still on the rails. Seven cars of hogs were crushed, about 300 animals getting out alive. Four cars of coal made the usual immovable pile, and the wreck blocked both main tracks until 11 p. m.

The trains in collision near St. George, N. Y., on the 14th were a northbound passenger train consisting of a locomotive and three cars, and a heavy freight engine without train, the freight engine running into the rear of the passenger. The freight engine had no persons on it, having been started, in some way not explained, by a repair man in the yard at Clifton; and, running at about 40 miles an hour, it struck the passenger train moving at about 20 miles an hour. The engineman of the passenger train shut off steam and applied the brakes; but the engine at the rear pushed the train about a mile and finally off the track at the St. George tunnel. One employee riding in the baggage compartment, at the rear of the train, was injured and was sent to a hospital; but the other passengers, 35 of them, who in a few cases were slightly injured, were all sent to their homes.

The trains in collision at Nashville, Tenn., on the evening of the 16th were southbound freight No. 73, first and second sections. The first section had been stopped by a block signal and was run into at the rear by the following section. The conductor, in the caboose, was killed. Responsibility for the collision is charged against the flagman of the first section, who did not properly protect his train.

The train involved in the collision at Rosamond, Cal., on the 16th was an eastbound passenger. A string of six loaded freight cars, which escaped control at a point 14 miles west ran down the grade and into the rear of the passenger train and wrecked one car, a sleeping car. Two other cars were overturned. One passenger and one trainman were slightly injured. The runaway cars passed over a derail, which failed to stop them because it broke (by reason of defective metal) at the point of contact with the wheel flange.

The train involved in the collision at Peoria, Ill., on the 17th was westbound passenger No. 201. The train ran through a misplaced switch and collided with a yard engine standing on a side track. Two employees were killed and one seriously and three slightly injured.

The trains in collision at Passaic Junction, N. J., on the morning of the 28th were eastbound freights. The leading train had just begun to move, after a stop, when the following train ran into the caboose, wrecking the caboose and overturning the engine. Eight cars were damaged. A drover in the caboose of the leading train was fatally injured and 4 trainmen were less severely hurt.

The trains in collision at Eureka, W. Va., on the morning of the 29th about 3 o'clock were westbound passenger No. 77 and eastbound freight No. 98, second section. One fireman was killed and three other trainmen were slightly injured. The freight, drawn by two engines, had run past a meeting point and encroached on the time of the passenger train. It had been stopped and the flagman had gone forward a short distance but there was a dense fog, and the flagman had not had time to go far enough to protect his train.

The train derailed near Toccoa, Ga., on the 1st of July

was northbound passenger No. 38. The engine, and first three cars were ditched.

The train derailed near Shippensburg, Pa., on the 5th was a northbound passenger. The engine fell down a bank and the engineman and fireman were scalded, the former fatally. No passengers were injured. The cause of the derailment was distortion of rails by solar heat.

The train derailed near Granogue, Del., on the 8th was southbound passenger No. 12. The engine fell down a bank and was overturned. Two trainmen and 12 passengers were injured. The cause of the derailment was not determined.

The train derailed near Dalton, Ga., on the 8th was southbound passenger No. 93. Fifteen passengers and five trainmen were injured. The cause of the derailment was not determined.

The train derailed on the Boston, Revere Beach & Lynn at Winthrop, Mass., on the 10th was a southbound passenger. One passenger was killed and eight were injured. The derailment was caused by the moving of a movable point frog, beneath the moving train, by a student signalman, though it appears that the regular signalman was in the cabin. Electric track-circuit locking, which would have prevented the movement of the frog under the train, is being installed, but is not finished.

The train derailed near Caldwell's, N. C., on the 17th about 5 a. m. was northbound passenger No. 26. The whole train was overturned and the engine and cars fell down a bank. The fireman and one passenger were killed and the engineman, one mail clerk and three passengers were injured. The derailment was due to a loose rail from which the angle bars and 11 spikes had been maliciously withdrawn.

The train derailed near Victoria, La., on the 18th was a special passenger carrying soldiers. One soldier was killed and five were injured. Four coaches were overturned.

The train derailed on the Louisiana & North West near Homer, La., on the 18th was a northbound passenger; two coaches were overturned and 14 passengers were slightly injured. The cause of the derailment was spreading of rails.

The train derailed near Hope Mills, N. C., on the 20th was southbound passenger No. 89. Running at about 20 miles an hour, the first car behind the engine was derailed by the weakening of the roadbed by a washout and six cars altogether were ditched. Several passengers and three trainmen slightly injured.

The train derailed near Bryan, Tex., on the 28th was a northbound passenger. The engine and first two cars were overturned and the fireman was killed. Two other trainmen were injured.

The train involved in the accident at Edgewater Park, N. J., on the 28th was a westbound freight. The cars in the train were set on fire by burning gasoline spilled from tanks in a motor truck which was driven into the locomotive of the train at a highway crossing. The gasoline, being lighted presumably by contact with the locomotive firebox, ran along the ditch at the side of the track and set several cars on fire. Sometime after the wrecking of the truck a second tank exploded and did serious damage within a radius of 300 ft. Two cars and the railroad freight house were burned up. The driver of the motor truck was injured, and the explosion caused the death of one and the injury of 14 other men, most of them firemen, fighting the flames. This crossing has an automatic warning bell which is said to have been ringing; the train was moving at about 20 miles an hour.

The train involved in the accident near Galilee, N. J., on the 30th was a southbound passenger. The train struck an automobile truck on a highway crossing causing an explosion of gasoline, and the engine and the two cars of the train were at once in flames. One coach was burned up, as was

also the passenger station. The engineman and fireman were severely burned; the engineman fatally. The driver of the wagon was killed.

Electric Car Accidents.—Seven accidents to electric cars occurred in the first five days of July, and were reported in the *Railway Age Gazette* of July 13, page 77; in these accidents the number of persons reported killed was 18 and of injured 185. At Montclair, N. J., on the 17th an electric car filled with a picnic party ran away down a steep grade and 60 persons were reported injured. This car was started by accident, or by the action of some mischief maker, while the conductor and motorman had got off for the purpose of assisting another car which was in trouble.

Canada. In a butting collision of passenger trains on the Canadian Northern near Villeneuve, Alberta, 21 miles west of Edmonton, July 30, five passengers were killed and a large number injured. The reports indicate that the collision was due to a mistake in a train order or to the non-delivery of an order.

RAILROADS HAVE SUBSCRIBED FOR \$48,750,000 OF LIBERTY LOAN

The railroads which are now stretching every muscle to secure Liberty Bond subscriptions among their employees and to advertise the loan to their patrons, are leading the way themselves by having subscribed up to Wednesday evening for almost \$50,000,000 in bonds for their own treasuries.

In last week's issue of the *Railway Age Gazette* a list was given of 11 roads that had subscribed \$37,250,000 in the Second Loan, and note was made on another page that the Pennsylvania had taken \$5,000,000, a total for 12 roads of \$42,250,000. During the past week additional subscriptions have been recorded of \$3,500,000 by the Chicago & North Western \$2,500,000 by the Chicago, Milwaukee & St. Paul and \$500,000 by the Virginian, making the total up to Wednesday night of \$48,750,000.

The Liberty Loan Committee on Railroads headed by A. H. Smith, president of the New York Central, has received assurances that nearly every important road in the country is offering to assist its employees to take bonds on the partial payment plan. Railway employing officers the country over are going after it strong with personal talks, shop meetings and local conferences. A special drive is being made for those who did not subscribe to the first loan and extra efforts are being made to assist those who took bonds in the first Liberty Loan and who are to that extent still tied up on payments.

On some railroads an arrangement has been made whereby banks will take the bonds in the first issue not yet paid for, the employee's partial payments on the bond being applied instead on bonds in the second loan.

"Do you believe in insurance?" says the appeal sent out by the General Liberty Loan Committee of the Central of Georgia, headed by W. B. McKinstry, auditor. "This question," the appeal continues, "will be affirmatively answered by a large majority of Americans today, when practically every known risk may be protected by insurance of some character, but the danger which confronts our country can be averted by only one form of protection—men and more men. Thanks to the patriotism of Americans, as a whole, the men are or will be available to protect our homes and shores from the invasion of the Prussian hordes, but those men require transportation, clothing, equipment and food, and those necessities may be secured only through one medium—money! To cover this risk, Uncle Sam is now offering a form of insurance in policies of variable amounts, which he calls *Liberty Bonds*. These policies are of the single premium variety, fully paid up, non-assessable and fully participating. Non-assessable, in that they are not

subject to taxation and fully participating in that they pay interest until their maturity. These policies are backed by a reserve represented by the strength of the government of the United States and are strictly mutual in that each purchaser is a part of the government, and by his patriotism and loyalty can guarantee the validity of his policy.

"How much insurance will you buy?"

THE DAYTON BOOK UMBRELLA

A "book umbrella" is a small rectangular glass box, open at the underside to permit the user to insert his hand, designed to hold a car record book so that the number taker, working outdoors, can carry on his work conveniently in spite of rain or snow. The umbrella needs little description other than that afforded by the illustration, showing a man entering on his book Big Four car No. 6,385. It is 6 in. square, light, strong and durable, and is fitted with a strap by which the clerk can suspend it from his shoulder. Clips are provided at top and bottom by which a book, where a book is used, can be held open at the desired page.

An "umbrella" of different shape is made to hold loose flat sheets, these being held by clips, at the upper end,



The Dayton Book Umbrella

working the same as the ordinary clip used in offices. This design is 11 in. wide 13½ in. long and 5¾ in. high.

When required the umbrella is equipped with a light for night use. This is fixed at the upper end of the box so as to illuminate both the writing surface within the box and the number on the side of the car. The light, electric, is, of course, safe for use around cars containing inflammable freight.

The umbrella is made by the Dayton Manufacturing Company, Dayton, Ohio. It has been used in the yards of the American Rolling Mills for several years and is in experimental use on the Baltimore & Ohio, the Big Four, the Southern and other railways.

Bridge and Building Association Convention

Abstracts of Committee Reports and Papers Presented
at the Meeting Which Was Held This Week in Chicago

THE twenty-seventh annual convention of the American Railway Bridge and Building Association was held at the Sherman Hotel, Chicago, on Tuesday, Wednesday and Thursday of this week. The attendance was very encouraging, considering the unusual conditions obtaining in the country at the present time. The discussions indicated an active interest in the reports and papers presented, many of which were of particular application to the problems now confronting the members of the bridge and building staffs on American railways.

The officers for the past year were: President, C. E. Smith, consulting engineer, St. Louis, Mo.; first vice-president, E. B. Ashby, consulting engineer, Lehigh Valley, New York City; second vice-president, S. C. Tanner, master carpenter, Baltimore & Ohio, Baltimore, Md.; third vice-president, Lee Jutton, division engineer, Chicago & North Western, Madison, Wis.; fourth vice-president, F. E. Weise, chief clerk, engineering department, Chicago, Milwaukee & St. Paul, Chicago, and secretary-treasurer, C. A. Lichty, purchasing department, Chicago & North Western, Chicago.

The convention was called to order by President Smith at ten o'clock, Tuesday morning; addresses of welcome or other opening exercises were dispensed with.

President Smith called attention to the trying conditions under which the bridge and building men are now laboring and to the decision of the executive committee to hold the convention to assist the men in their work. The report of the secretary-treasurer showed a balance on hand of \$958.

DELIVERY OF WATER TO LOCOMOTIVES

Water is delivered to the tender of a locomotive either directly from a storage tank or through a pipe line and a discharging device, commonly called a water column, standpipe or penstock. Penstocks or water columns have taken the place of tank spouts to a large extent in modern installations of railway water stations, largely because they permit a more convenient location of the tank and also the taking of water at several points. The desirable qualifications in a penstock are a rapid delivery of water with low frictional resistance to the flow, and a valve movement that may be handled and controlled easily without water hammer. The construction of the penstock should be such as to permit it to be operated easily and to be economical in maintenance. The importance of the time element in train service requires that the delivery of water to the tender be made as quickly as possible. For this reason the waterways should be of ample size and the flow of water through the column as direct as possible.

The following paragraph on the discharging capacity of penstocks is taken from the University of Illinois bulletin No. 21:

"It would seem that with a short line of pipe from the supply tank a velocity through the water column of 12 or 15 ft. per sec. may be considered as the maximum desirable for ordinary conditions, and for longer lines the limiting velocity should be smaller. For a long line of supply main the limit of allowable velocity would be perhaps as low as 8 ft. per sec. It would seem, then, that 3,000 gal. per min. for an 8-in. water column, 4,000 gal. per min. for a 10-in. water column and 6,000 gal. per min. for a 12-in. water column may perhaps be considered to be the limit of desirable flow through water columns. It would also appear that a loss of much more than 20 ft. of head for the discharges just men-

tioned may be considered to be excessive, under conditions of ordinary tank supply."

The principal advantages in the use of penstocks or standpipes are that they permit the selection of a permanent location for a tank remote from the tracks and out of the way of future construction, and that they make it possible to deliver the water to locomotives from a single storage tank at as many different points as may be desired.

It is important that supply lines leading to penstocks be designed properly. A penstock operating under a low head should have a larger pipe than one working under a relatively high head. The same thing is true of a long pipe line. If the maximum delivery is desired the supply line should be at least two inches larger than the penstock. Where several penstocks are installed in a busy yard or where more than one engine will take water at the same time, the supply line should be large enough to supply water to more than one penstock without any material decrease in the delivery. A 12-in. penstock with a 14-in. main 1,000 ft. long, will deliver 4,000 gal. per min. with approximately the same loss of head as a 10-in. penstock with 1,000 ft. of 12-in. main delivering 2,750 gal. per min. or an 8-in. penstock with 1,000 ft. of 10-in. main delivering 1,750 gal. per min. A distance of 20 ft. from the top of the rail to the bottom of the tank is generally accepted as the economical height of tower for tanks.

The proper location of penstocks is an important factor in the economical delivery of water. At engine terminals they should be located conveniently so that an engine may take water along with other supplies, such as coal, sand, etc., without any switching or back-up movement. Penstocks serving yard engines should be so located that they will not interfere with the movements of road engines handling trains or with the movements of engines to and from the roundhouse. In a large yard it is important that the engines do not block the switching lead when taking water, the proper location of penstocks being at each end of the yard, where engines may take water after receiving their trains. In a large yard this may mean a heavy expense for pipe lines, but where there is a frequent train movement the expenditure will be justified by cutting down the terminal delay and facilitating the movement of trains. Where the distance from the main supply tank is very great as for example at an isolated penstock at the far end of a station or yard layout, it will frequently prove more economical to locate an auxiliary tank opposite the penstock, as the supply would be taken by gravity from the main tank through a much smaller pipe than if the engines were supplied direct from the main tank through a penstock main.

An important feature in the economical delivery of water to locomotives is the prevention of waste while taking water. This is sometimes due to carelessness on the part of the fireman, but more often is the result of faulty fixtures and improper design of the manhole on the engine tank. The great range in the height of manholes above the rail makes it a very difficult matter to provide fixtures that may be adjusted to the varying heights unless the manhole is of liberal size. This is especially true of tank spouts. The manhole should be rectangular in shape and not less than 16 in. wide and 30 in. long. It will be found that when taking water with a spout without lateral adjustment, the spout will be at the outside edge of the manhole on high tenders and near the inside edge on low tenders. Thus it will be seen that it is impossible to avoid a waste of water

with round manholes unless they are of uniform height above the rail.

(C. R. Knowles, superintendent of water service, Illinois Central, Chicago, is chairman of the committee presenting this report.)

DISCUSSION

The relative merits of the telescopic and rigid types of spouts created active discussion. B. F. Pickering (B. & M.) stated that he has found the telescopic spout more expensive to maintain than the rigid type and that, as a result, he has replaced several of the telescopic spouts with rigid ones. Several members reported that their experience has been the reverse and that the telescopic spout was more economical in maintenance and in water. Mr. Bowers (Pa. Lines) stated that there are 60 rigid spouts in service on the Pittsburgh division and that, although road engines are not required to cut off their trains, no trouble is experienced.

ERECTION OF GIRDER SPANS WITH LITTLE INTERRUPTION TO TRAFFIC

Bridge work must be planned to interrupt traffic as little as possible, remembering that, when trains are stopped on account of a bridge not being ready, a portion of the plant is shut down and the output is stopped until trains are allowed to proceed.

In the erection of railroad bridges under traffic, one of two general methods must be selected for each particular case. The old bridge must be taken out in small portions and the new bridge erected in the same manner, or the old bridge must be taken out and the new one put in by handling one entire span in one operation. The first method is almost always selected when the traffic over the bridge is quite heavy, making it impracticable to suspend traffic long enough to permit the taking out of an entire span. There are times, however, when this method cannot be followed even in the case of large structures and on heavy traffic lines. In such cases falsework cannot be put in for the erection of bridges in sections and some method must be found to put in one entire span at one operation. When bridges are erected by putting in a portion of a span at a time it is necessary to provide a rather large amount of falsework and to arrange this falsework so that the work of changing from the old bridge to the new can be stopped at any point in order to let trains over when they reach the bridge.

The method of putting in bridges by changing out one entire span at a time is usually selected when traffic conditions are not severe. It has the great advantage of requiring little or no falsework. As has been mentioned above, however, this method must be used, no matter what the traffic conditions are, when it is impossible to put in falsework, such as over busy navigable streams or railroads. Almost always the new span is assembled and riveted alongside the span it is to replace. This necessitates the erection of one falsework bent at the end of each pier and abutment to receive the new span in its temporary position. This is usually put on the down-stream side; although if local conditions require it may be put on the up-stream side. Almost always the ties and rails are put on the new span in its temporary position so as to avoid doing that work after the span is moved into its permanent position. Before the new span is moved it is, of course, necessary to dispose of the old span. If time will permit, the best method is to cut the old span apart and lift it out with a derrick car. If, however, time will not permit, falsework bents must be erected on the opposite side of the piers and abutments from the new span so that the old span can be moved out to one side preliminary to the moving in of the new span. If the weight of the new span and the capacity of the derrick will permit, the new span should be assembled on the ground at the end of the bridge and then carried bodily into place. The old span, of course, can be removed in the same way. When conditions

will permit this method of erection no falsework of any kind is needed.

When through truss spans are replaced with deck-plate girder spans, it is almost always possible to set the girder spans inside of the truss spans by cutting down the masonry and removing the lower laterals and the floor system of the truss spans. Under proper conditions the girders can be lowered with rigging suspended from the top chords of the old trusses. This is a very economical method of erection, but it can be used only on lines where the traffic is comparatively light.

(Lee Jutton, division engineer, C. & N. W., Madison, Wis., is chairman of the committee.)

DISCUSSION

The discussion brought out a number of interesting methods developed by members to renew bridges without interfering with train movements. These consisted mainly in modifications of methods described by the committee.

W. F. Strouse (B. & O.) made a progress report on repairing and strengthening old masonry, giving replies of several roads to inquiries concerning the advisability of grouting old masonry and other expedients. In the discussion C. E. Smith described the conditions existing on the Missouri Pacific ten years ago when the piers or abutments were moving under 150 bridges on line. These substructures were all strengthened by concrete without a single failure. Other members told of different ways in which they had strengthened structures.

PAINT AND ITS APPLICATION TO RAILWAY STRUCTURES

Wooden and frame structures require the greatest amount of attention and expense, for the only practical method to protect them from decay or to improve their appearance is to apply a preservative coating of high-grade paint. Unpainted wood will darken, warp, become fuzzy and damp and finally decay, but it may be protected permanently from these effects through the occasional use of high-grade paints. Paint acts as a preservative on wood because it closes the openings and pores and so prevents the entrance of decay-producing organisms.

The different species and types of woods vary greatly in their makeup, porosity and compactness, all serious points when the initial or priming coat of paint is applied. White pine and poplar, being soft, close and straight-grained woods, comparatively free from shrinkage, possess good absorbing qualities and a ready affinity for paint, while yellow pine and hemlock are hard, coarse-grained, of very resinous and uneven structure, varying from a soft, porous and quick-absorbing, to a very hard and fast surface into which paint cannot penetrate.

The first class requires that the priming coat be reduced to a medium thin consistency, carrying very little turpentine. The second demands a thinner mixture, carrying from 25 to 40 per cent of turpentine.

Nearly every railroad has adopted a certain standard of painting, both as to method and colors, including the formulas composing the different mixtures. These mixtures, called "standard colors," are usually bought in the open market, although some roads have paint-mixing departments of their own. In a great many cases this material is brought ready for application, thus leaving no room for adjustment to fit the different surfaces, and, of course, is applied as received.

The act of priming or first-coating is the most important operation in painting, although in many cases it is not so considered, which is a vital mistake. The priming coat must fill and satisfy the surface, and so create a foundation upon which all future coats can be successfully applied. It must carry sufficient linseed oil not only to satisfy the surface, but must also bind and hold the pigments to this surface. Priming mixtures must also carry the proper amount of turpentine to cause penetration and assist in forcing the

oil and pigment into the surface by absorption. The formation of the pigment must be such as to allow of penetration into the surface, and, above all, must be well and evenly spread and brushed into the surface.

The prime coat should not stand longer than is necessary to harden the film thoroughly and allow for full absorption and penetration. If allowed to weather, it will become porous and absorb the life of the second coat and there will not be sufficient binder left to adhere to the surface properly.

Usually, railway standards and specifications provide whether two or three coat work is desired, but it should be borne in mind that in trying to finish in two coats over dark, hard and pitchy lumber, especially with light shades, success at some future time may be sacrificed. In the second and finishing coating of structures, care must be exercised in spreading the paint evenly and clean and avoid sags and curtains.

Shingle roofs, at least on the better class of buildings, ought to be painted with some high-grade material, not only to preserve the roof, but to improve the appearance of the structure as well. Moreover, a valuable characteristic of high-grade paint is its resistance to fire. On brick and stone structures, with the exception of window and door frames, sash, doors, gutters and down spouts, no painting is really necessary. The method and color for these items is generally the standard in vogue on each system.

On steel and steel-covered structures, the primer or first coat must be selected judiciously. If the standard finishing color for these structures is of a carbon or lampblack base, it would be wrong to use such a paint for the ground coat applied directly upon the steel. This primer should be a properly prepared rust inhibitive coating, from basic pigments, such as red lead, sublimed blue lead, oxide, chromates or the like inhibitive materials. Over such a ground after proper drying time has elapsed, carbon or other standard paints may be successfully applied. Practical tests have proven that ultimate economy is effected by using only the highest grade of the proper kinds of paint for metal protection.

(Chas. Ettinger, master painter, Illinois Central, is chairman of the committee.)

DISCUSSION

In reply to a question the chairman of the committee stated that the smoke and soot created more severe conditions along railways than elsewhere. G. M. Hoffman, Philadelphia & Reading, stated that the practice of that road is to wash buildings thoroughly and then apply one coat of paint every two, three or four years, according to conditions.

FIREPROOFING ROOFS OF WOODEN BUILDINGS

Wooden shingles were almost universally used in the earlier days of railroads for the covering of all ordinary buildings having roofs with a pitch greater than one-fourth, and while they are rapidly losing favor there are certain localities where they will be used for some time to come owing to their moderate cost, light weight, low heat conductivity, wide application and durability. When shingles get old they become a considerable fire risk and are set on fire readily by sparks from passing locomotives. While there are a number of preparations on the market to make them fire-resisting to a considerable degree, they are likely to be neglected beyond the length of time the preparation remains effective and in this way the roof again becomes a fire risk.

Coverings prepared by saturating felt with asphalt, sometimes termed "composition roofings," or "prepared roofings," are sufficiently fire-resisting for all practical purposes, and on buildings which have a pitch of one-fourth or greater, and where appearance need not be taken into consideration, such material laid from rolls in large sheets with 2-in. lap joints may answer the purpose as well as anything. Most wooden buildings with flat roofs or roofs with slight pitch

are best covered with tar and gravel or metal roofs, the former being generally used on main buildings, and tin in sheets on porch roofs and other places where tar and gravel would be objectionable.

Shingles made from a composition of cement, asbestos, etc., having various trade names are used to a considerable extent and they present a good appearance.

Slate shingles have been in use many years, and for roofs having more than a moderate pitch they are perhaps as durable as anything on the market, or much more so. In cold climates where the pitch of a slate roof is less than one-third or one-fourth, it often proves troublesome.

Tin shingles are used to a considerable extent on some roads and give good satisfaction. When secured with the "bar lock" it is impossible for a tin roof to leak during its lifetime. These shingles are manufactured in various ornamental styles and make a neater appearance than any other kind of ordinary metal covering. Their life on railroad buildings depends entirely on the kind of metal and its protective coatings—tin, galvanizing, paint, etc.

The ordinary tar-and-gravel roof is probably more extensively used on roofs having a slight pitch than any other kind of covering, and its wearing qualities are so well known as to require little comment. Its life depends solely upon the quality of the materials used and their application. Roof coverings which require protective coatings are at a decided disadvantage, for the reason that they are liable to be neglected beyond the time when the coating remains effective when the covering suffers and may result in premature loss.

(C. A. Lichty, inspector, purchasing department, C. & N. W., Chicago, is chairman of the committee.)

DISCUSSION

Doctor Herman Von Schrenk described the results of ten years' investigation of methods of fireproofing wooden roofs and of the development of fire retarding paints. He also showed an exhibit of sample roof sections.

UNIFORM VERSUS DIFFERENTIAL RATES OF PAY

By E. T. Howson

Engineering Editor, *Railway Age Gazette*, Chicago, Ill.

The bridge and building department, in common with other branches of the maintenance of way department, is experiencing serious difficulty at present in retaining adequate forces. The competition for men has become unusually keen, particularly since July 1 of this year, when the construction of the cantonments and other concentration camps for military forces called for large numbers of carpenters and other skilled mechanics at wages far above those which the railroads were paying.

The principle upon which wages in the maintenance of way department are based is that of a flat or uniform rate for every man. This in turn presupposes that all men are worth equal amounts or that they are of equal ability and efficiency. It is primarily because of this foundation that difficulty has arisen in retaining forces. Furthermore, the railways have not kept pace in the last few years with the rapid increase in the wages of skilled workmen in other industries. In many cases it has been considered impracticable to raise the wages of the large numbers of men employed because of the expense involved, while in others the disinclination to disturb relations with the wages of other employees has tended to hold all of them stationary. The result has been that the outside industries have been able to attract the best men, leaving the less efficient to the roads.

One suggestion which has been made to meet this condition in the bridge and building department is that of establishing different rates for the men in the gangs, which rates could be so arranged that while the total payroll for the gang would not be increased, the men would be paid in proportion to their experience. A graduated rate can also be

held out to the newer men in the gang as a reward for experience and as an incentive for them to put forth their best efforts.

One objection to this system which has very largely retarded its adoption is the fact that the establishment of a higher rate for one group of men disturbs relations with other groups. An even more serious objection to the differential rate is the tendency of some foremen, and not a few supervisors, to use such a differential as a means of securing higher wages for as many of their men as possible without regard to their merit or the purpose of the differential.

In spite of these handicaps, a differential wage rate adjusted to the merits of the different classes of employees has much to commend it, particularly at the present time when labor is so scarce and so nomadic. If fairly and intelligently administered, it will benefit a road by enabling it to meet the competition of industries to a greater extent than is now possible, while it holds out the promise of reward to the younger and less experienced but ambitious workmen.

This is not an untried theory, for at least one road; the St. Louis-San Francisco adopted the plan of paying differential rates for its bridge, building, painting and concrete forces over a year ago, with excellent results. The officers in charge of this branch of maintenance work stated that if this plan had not been in effect much of this work, now completed, would have had to have been left undone because of lack of forces. The statement is further made that this plan has been shown to be economical to the road.

DISCUSSION

G. W. Andrews (Baltimore & Ohio), Fred Burrell (Chicago & North Western) and others, reported excellent results from a sliding scale of wages.

PRESENT SITUATION AS TO WATER SERVICE MATERIALS

By C. R. Knowles

Superintendent Water Service, Illinois Central.

Although a very conservative estimate of the increased cost of all materials used in maintenance of way work has been given as 30 per cent, I think we can safely say that with few exceptions, this figure will come nearer representing the minimum increase in the cost of waterworks materials, many items having increased several hundred per cent. The unprecedented prices and the uncertainty of delivery have created conditions which make it very necessary to employ methods that will help to conserve materials used in waterworks construction and maintenance, especially with such materials as are particularly difficult to secure.

From the present outlook some relief appears in sight as regards prices of certain materials, the price of cast-iron pipe having dropped \$15 per ton on October 1; although with the government and foreign requirements, in addition to the greatly increased domestic demands for materials of all kinds, we cannot hope for much relief in the near future, as far as deliveries are concerned.

While all materials have advanced in cost, the increase has been more marked in iron and steel products, and articles manufactured from brass, copper and other semi-precious metals. Boilers have doubled in cost with indefinite dates of delivery on those built to specifications. Steel tanks of all kinds have advanced from 100 to 150 per cent, tank hoops from 75 to 100 per cent, steam pumps from 40 to 50 per cent and oil engines 30 to 40 per cent, with deliveries from 3 to 9 months in the future, depending on the size of the units.

All stocks of steel and wrought-iron pipe have been depleted and it is difficult to even get a quotation on a definite date of delivery on large pipe. Delivery on cast-iron pipe has been fairly good, although the price has more than trebled in two years. We are laying cast-iron pipe today that

ranges in cost from \$18.50 to \$60 per ton, while the lead used in making the joints has advanced from \$3.75 to \$11 in two years.

The following table shows the range in cost of cast-iron pipe from 1912 to date.

Year	1912	Approximately	\$20.65	per net ton
Year	1913	Approximately	20.35	per net ton
Year	1914	Approximately	18.50	per net ton
Year	1915	Approximately	18.60	per net ton
Year	1916	Approximately	25.00	per net ton
January, 1917		Approximately	32.75	per net ton
July, 1917		Approximately	49.30	per net ton
October 1, 1917		Approximately	60.00	per net ton

It is along the line of salvaging old pipe lines that the greatest good may be accomplished in conserving waterworks materials. The salvage of cast-iron pipe is almost 100 per cent. Except for the cost of removal, a cast-iron line is of as much value when taken out of the ground after years of service as when it was laid. It is true that a year ago, with cast-iron pipe at \$18 per ton, the cost of removal would in many cases have almost equaled the cost of new pipe, but with pipe at \$60 per ton the removal of old lines is a paying proposition. In many instances wrought-iron pipe may also be salvaged to good advantage.

The saving effected by the conservation and salvage of second-hand material is not confined to pipe alone, but includes all classes of materials. Tank hoops may be repaired and used on other tanks. Sound staves and bottom plank may be utilized in the construction of smaller tubs; valves and fittings may be repaired at a small cost and made to answer for new; rubber pump valves may be faced off and used again; pump packing, worn too small for one pump, may be used in a pump requiring smaller packing.

In many cases standards may be revised, substituting material expensive and difficult to secure with that less expensive and more easily obtained. For example, we have changed the design of our water-column pit, eliminating about 3,000 lb. of castings and several hundred pounds of reinforcing bars, and I believe we now have a better designed pit than we had before. The difficulty in securing steel plates and the great increase in the cost of steel tanks have forced many railroads which had practically adopted the steel tank as standard to return to wood. The high price of steel has also stimulated the interest in concrete tanks and there is great activity along this line. The high cost of cast and wrought iron pipe has caused many railroads to give serious consideration to substituting wood stave for iron pipe.

A great deal may be accomplished in conserving materials by overhauling scrap piles and reclaiming second-hand material, also by cleaning out shelves and the pump houses of the ever-present accumulation of globe valves, fittings, etc., held for a fancied emergency that never occurs. Scrap has advanced in price to such an extent that in some instances the scrap value of an article is in excess of its cost new a few years ago, consequently scrap should be kept cleaned up and forwarded promptly to the storehouse in order that the scrap may be disposed of to the best advantage.

It has been truly said that "The ways in which material and supplies are wasted on a railroad are as many as the number of persons in its employ," and if we may learn the lesson of economy in the use of materials from the present situation it will not have been without its good effect.

DISCUSSION

The discussion of steel, timber and water service materials brought out many descriptions of bridges strengthened to avoid use of new material. I. L. Simmons (Chicago, Rock Island & Pacific) urged that more attention be given to the question of how present structures can be carried over rather than be renewed. Old spans can frequently be strengthened at small expense.

ORGANIZATION AND OPERATION OF BRIDGE AND BUILDING MATERIAL YARDS

By H. C. Pearce

General Purchasing Agent, Seaboard Air Line.

The location of bridge and building material yards must be governed very largely by the geographical location of the property. In the southeast it has been an open question in the past whether it was either economical or necessary to have large general distributing bridge and building yards. Most of the larger systems in the southeast have a large number of mill operations on their own lines, particularly in Georgia and Florida, and lumber has been cheap. Under these conditions arrangements can be made with certain mills to take care of certain territories. This plan, however, leaves many loose ends, and incurs many concealed losses. It is not, and never will be, entirely satisfactory, but the direct saving is so considerable that it must be considered under certain conditions.

On the Pacific Coast a large portion of the lumber comes by water. This makes it desirable that the material yards be located sufficiently close to the docks and wharves to use switching service. In the middle west, the location of lumber yards depends largely on the location of the timber treating plants and distributing territory, so that, broadly speaking, the location of the lumber yard must be left entirely to the geographical location of the property.

LAYING OUT OF YARDS

In laying out bridge and building material yards, the first consideration must be sufficient space and trackage. I have found double tracks to be the most economical. They require less space and ensure a more concentrated organization, switching facilities, and the use of cranes.

Piling, stringers and other trestle timbers should be unloaded on tracks adjacent to each other so that a train of cars can be set in and as many feet of trestle timbers as required, loaded in the quickest possible time. Cranes should, of course, be used wherever obtainable in handling heavy timbers and piling.

The ideal bridge and building yard would include a timber treating plant, planing and wood-working mill, assembling yard, rail yard, frog and switch shop and a general store, for the reason that it is desirable wherever possible to load everything out complete in one shipment or shipments from a central distributing point. The yard should be so arranged that all the material, from the piling to the bolts and washers, will be loaded and shipped in the same train. Frequently a certain number of feet of track, as well as a certain number of trestle timbers, is required. The organization should be such that the necessary rail, fastenings, frogs, switches, etc., can be loaded and shipped along in the same manner.

ORGANIZATION

Maintenance officers have criticized our supply departments for failure to provide material in an intelligent and prompt manner, and very properly so. The reasons are many, but the principal one is that all supply officers do not understand the importance of assembling their materials so they can be shipped in the order they are needed. Having prepared his plans and received authority to do certain work, the maintenance officer then concentrates his efforts toward getting it done. Under a proper organization, he should immediately prepare his requisitions for the necessary material to do the work, describing and classifying them properly. The storekeeper should have sufficient storehouse and platform facilities for assembling such portions of the material required as must be assembled and held together.

Unless the requisition states specifically that certain portions of the material for the structure are to go forward,

nothing should be shipped until everything is ready. All of the material should be charged direct to the job when shipped. When the work is completed, whatever is left over should be picked up, shipped back and proper credit allowed to the work order.

PERSONNEL

The personnel necessary to handle an efficiently organized bridge and building material yard may be said to consist of a foreman in direct charge, with as many working foremen as may be necessary, and the forces divided into gangs of about five men each. It may be said that the foreman should be a practical bridge and building man, and this would appear to be a reasonable conclusion; but the best material yard foremen that I have ever developed were from clerks.

This leads me up to the question as to what department should maintain and operate bridge and building material yards. I have stated that I know of no sound reason why this work should not be handled by the supply department. My reasons are that the providing, distributing and accounting for materials has become a highly specialized service. It is now generally recognized that the work of buying, providing and distributing materials should not be divided, and that the supply department should have charge of and be responsible for all unapplied materials. Such a department must be properly organized and have a sufficient, well trained force to do the work in the most expeditious and economical manner.

The supply department is the providing department. It is the duty of supply officers to so systematize their organizations that they will know absolutely before a purchase is made that it is necessary; that the proper materials have been specified; that the requisitions are prepared in such a manner as to procure the broadest competition; to so arrange their materials when received and to so organize their forces that they can be accurately inventoried, loaded, shipped and delivered where they are required in the shortest possible time, and to see that the salvage is returned, sorted, classified, reclaimed and disposed of to the best advantage. Unless the supply department is organized first on the basis of giving proper and immediate service, it can never be economical or efficient, and can never hope to accomplish the real purpose for which it was organized, which is the providing of suitable materials when and where they are wanted, at the time they are wanted, and at the lowest net cost. For these reasons I reiterate that there is no sound reason why our supply departments should not organize and operate our bridge and building material yards in co-operation with our maintenance officers.

DISCUSSION

A number of members took issue with the paper and advocated a departmental supply under the direction of the bridge department.

HOUSING AND FEEDING BRIDGE AND BUILDING MEN

By F. E. Weise

Chief Clerk, Engineering Department; Chicago, Milwaukee & St. Paul, Chicago, Ill.

We are told that labor is scarce, that it is hard to secure and that it is still harder to hold. This is reiterated so frequently that we cannot lose sight of it. Under such conditions workmen are inclined to be uneasy and there is a tendency on their part to make frequent changes. Anything that will serve to make men more contented with their jobs will do much to help eliminate the waste that is the sure result of constant changing, because the breaking in of new men is expensive. One of the hardest places in which to hold men is in railroad maintenance or construction work,

and of the many things that have an influence on the conduct of the men none is more potent than the way in which they are housed and fed.

In order to do effective work, and render efficient service, a man must be in good health, and the primary object of the camp should be to keep him physically and mentally fit for his work. Good, wholesome, properly cooked and well served food; comfortable, clean and well-ventilated sleeping quarters; provisions for bathing and recreation will accomplish this and secure the good will of the men. Good will brings about co-operation, and will reflect in the amount and quality of the work accomplished.

It has been quite a common practice in the past to house crews in old cars unfit for commercial service. This has been done especially for extra gangs in which a complete camp on wheels was established. This practice is gradually becoming obsolete because equipment is too valuable to be tied up in this manner and cars are only being used for crews that must be moved frequently. Where possible, it will be found to pay to fit up cars for the purpose of housing men. There are many arrangements of kitchen, dining room and bunks. Like building a house; every man has his own ideas and one plan may be as convenient as another.

When men can be located at one point and cover their territory by trains or motor cars, it is possible to provide them with permanent and comfortable buildings. Such buildings are mostly of frame construction and may be as varied in size and arrangement as the requirements demand. Again old car bodies are used either singly or in pairs with a roofed space between. The Chicago & North Western has a plan for a portable building which can be taken apart readily and shipped to another location if desired, thus making it applicable to either temporary or permanent locations.

When it has been decided that a camp is to be established, the site of the work should be examined carefully, and the location of the camp determined upon by considering the conditions that will make it habitable. Location, water supply, drainage and sanitation should be given careful study.

For the average camp, the dining room and kitchen should be in one building and separated by a partition. In the dining room end sufficient tables should be provided so that the entire force may be served at one time. It should be wide enough to provide for two long tables at the sides with an ample aisle between, which will permit waiters to pass back and forth freely. This form of building can be loaded on a flat car and transported from one location to another. For larger camps it may be better to construct the building in the shape of a "T," in which the dining room is one large room and the kitchen an annex at the center of one side. Another good plan consists of three adjoining buildings placed in the form of a letter "U," and provides for two separate dining rooms with a common kitchen. This plan is desirable where the force is apt to fluctuate.

It is quite customary in determining the price to be charged for board and lodging to charge the employee what he would have to pay ordinarily in nearby towns and then furnish as good board as possible with a view to having the camp pay for itself. The cost of meals furnished to those employees needed to operate the camp are considered a part of the camp expense. It will be found more satisfactory to use a rate per week than a rate per meal. In the former case, the matter of lost meals need not be watched, and there are apt to be fewer misunderstandings. As a general experience, a camp of 25 men or less will not pay expenses; a camp of from 50 to 75 men can be made to come out about even, and a larger camp will show a slight profit. This bears out the previous statement.

DISCUSSION

A. Montzheimer (Elgin, Joliet & Eastern) stated that steel underframes should be placed under all cars used for

housing men in order to increase the safety of transportation in trains.

THE NATIONAL SITUATION

Albert Reichmann, district manager of the American Bridge Company, at Chicago, presented a paper telling of the outlook in the steel market and the working of the priority law. He expressed the belief that sufficient steel will be available for actual railway necessities if ordered sufficiently early.

Dr. Herman von Schrenk, consulting engineer, Southern Pine Association, St. Louis, and O. P. M. Goss, consulting engineer, West Coast Lumber Manufacturers' Association, Seattle, described conditions in the lumber market. Dr. von Schrenk told of the heavy demands for cantonment work calling for dimension timber followed by the action of the government last week in commandeering all 12 in. by 12 in. southern pine timber and larger for wooden ships. Mr. Goss described the western trouble with strikes which cut down the output to 35 per cent of the capacity at one time but this has now increased to 75 per cent. Both timber speakers expressed the belief that the supply was sufficient for necessities.

C. A. Lichty made a verbal report on the conservation of materials which brought active discussion.

THE LABOR PROBLEM

Much consideration was given to the labor problem. Four letters were read from members discussing methods of securing and holding labor. They brought out a most active discussion on the floor. B. F. Pickering (Boston & Maine) described successful results obtained by employing one married man in a gang whose wife served as cook.

OTHER BUSINESS

E. E. R. Tratman, Engineering News Record, presented a paper on methods of encasing steel structures with concrete, citing instances of this form of construction.

J. R. Pickering, superintendent car service, Rock Island Lines, prepared a paper on the conservation of cars carrying company material. Several members told how they had organized to prevent delays to cars.

Tuesday evening was devoted to the memory of the late Samuel F. Patterson, secretary-emeritus and for 18 years secretary of the association.

The annual banquet given by the Bridge and Building Supplymen was held in Hotel Sherman on Wednesday evening. The convention adjourned Thursday forenoon. Members made an inspection of the Gary plant of the American Bridge Company on Thursday afternoon.

The total registration of members was 150, approximately equal to the record established last year.

The following officers were elected at the closing session Thursday morning: President, S. C. Tanner, master carpenter, Baltimore & Ohio, Baltimore; first vice-president, Lee Jutton, division engineer, Chicago & North Western, Madison, Wis.; second vice-president, F. E. Weise, chief clerk, engineering department, Chicago, Milwaukee & St. Paul, Chicago; third vice-president, W. F. Strouse, assistant engineer, Baltimore & Ohio, Baltimore; fourth vice-president, C. R. Knowles, superintendent water service, Illinois Central, Chicago; secretary-treasurer, C. A. Lichty, purchasing department, Chicago & North Western, Chicago. Members of executive committee: A. B. McVay, supervisor bridges and buildings, Louisville & Nashville, Evansville, Ind., and J. H. Johnston, superintendent bridges and buildings, Grand Trunk, Montreal.

THE SUPPLY EXHIBIT

The Bridge and Building Supply Men's Association held an exhibit in rooms adjoining the convention hall. Forty

firms were represented, the largest number in the history of the association. The names of the companies and their representatives and the nature of their exhibits are given below:

American Abrasive Metals Co., New York. H. Weaver Mowery.
 American Tar Products Co., Chicago. P. L. Griffiths, S. H. Fields.
 American Valve & Meter Co., Cincinnati, Ohio. D. J. Higgins, J. T. McGarry.
 Baker, John Jr., Co., Chicago. R. M. Elder, Wm. Howe.
 Barrett Company, The, New York. Holt roof connection, Tarvia platforms, ready roofings, built-up roofing and bridge waterproofing, shingles, paints, wood preservative, shingle stains and plastic cement. C. F. Ames, H. E. Barney, E. J. Caldwell, J. A. Clarity, H. W. Flemming, F. W. Freeman, E. P. Hobson, W. T. Kelley, G. R. McVay, J. J. Ross, T. A. Wharton.
 Bird & Son, Chicago. Samples of Neponset roofing. M. L. Caton, H. A. Inwood.
 Carbic Manufacturing Co., Duluth, Minn. Carbide flood lights. Harry Bolinder, Gordon Paterson.
 Carey, Philip, Company, Cincinnati, Ohio. C. L. Cockrell, F. R. Schueler.
 Chicago Bridge & Iron Works, Chicago. Photographs of tanks. H. C. Brown, M. J. Trees.
 Detroit Graphite Co., Detroit, Mich. J. J. Hogan, L. D. Mitchell, W. D. Waugh, T. R. Wyles.
 Dickinson, Paul, Co., Chicago. Adjustable cast iron chimneys, models of Aeolus building ventilators and smoke jacks.
 Dixon, Joseph, Crucible Co., Boston, Mass. Silica-Graphite paint for bridges, building and water tanks, crucibles, lubricants, boiler graphite and Dixon's Eldorado pencils. F. R. Brandon, H. A. Nealley.
 Duff Manufacturing Company, Pittsburgh, Pa. Lifting jacks. E. A. Johnson, C. N. Thulin.
 Fairbanks, Morse & Co., Chicago. F. M. Condit, E. J. Coverdale, F. P. Drinker, E. C. Gollegay, G. Howard, J. L. Jones, D. K. Lee, L. H. Matthews, A. A. Taylor.
 Flintkote Manufacturing Co., New York. Rex strip shingles, wide space shingles, Flintkote roofing, construction roofs, Paradux roofing. G. Ellingwood.
 Johns-Manville Co., H. W., Chicago. Asbestos roofing and asbestos smoke jacks. P. C. Jacobs, D. L. Jennings, W. H. Lawrence, C. E. Murphy, W. D. Otter, J. H. Trent, E. H. Willard, J. C. Younglove.
 Lehon Company, The, Chicago. Roofing, building paper and waterproofing fabrics. Tom Lehon, D. B. Wright.
 Massey, C. F., Company, Chicago. Photographs and literature on reinforced concrete products. C. F. Massey, J. E. Moody.
 Mineral Products Company, Chicago. Chas. V. Eades.
 Mudge & Co., Chicago. Solvit compound paint remover, photographs and literature. Geo. W. Bender, Burton W. Mudge, F. Possen.
 Nichols, Geo. P., & Bro., Chicago. Model of transfer table, photographs.
 Henry Fries, Geo. P. Nichols.
 Patent Vulcanite Roofing Co., Chicago. Roofing materials. H. A. Van Page, J. P. Woolsey.
 Pyrene Manufacturing Co., Chicago, Ill. Fire extinguishers. W. B. Caulson, R. B. Henderson.
 Railway Review, Chicago. Current issues of paper. W. M. Camp, J. E. Gougeon, Harold A. Smith.
 Simmons-Boardman Publishing Company, New York and Chicago. Current issues of *Railway Age Gazette* and *Railway Maintenance Engineer*. John H. Cross, E. T. Howson, L. B. Sherman, J. M. Rutherford.
 Standard Asphalt & Refining Co., Chicago. E. K. Carter, R. F. Trumbull.
 U. S. Wind Engine & Pump Co., Batavia, Ill. Literature on pumps and tanks. C. E. Ward, L. E. Wolcott.
 Volkhardt Co., Inc., New York. Non-freezing water hydrants. Chas. P. Cogswell, Wm. Volkhardt.
 Whiting-Evans Mfg. Co., Chicago. Kerosene carburetors. F. R. Callans.

The officers of the Bridge and Building Supplymen's Association last year were: President, H. A. Nealley, Jos. Dixon Crucible Company, Boston vice-president, L. D. Mitchell, Detroit Graphite Company, Detroit; treasurer, P. C. Jacobs, H. W. Johns-Manville Company, Chicago; secretary, Tom Lehon, The Lehon Company, Chicago.

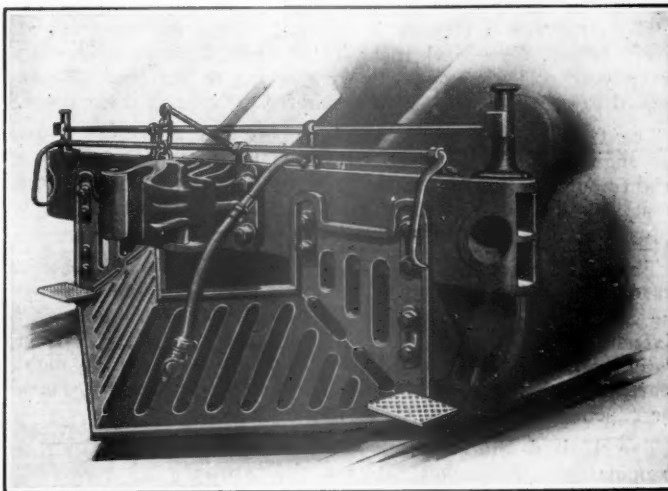
SIAMESE APPROPRIATIONS FOR 1918.—In the budget estimates of Siam for the fiscal year ending March 31, 1918, appropriations have been made to the amount of \$1,369,000 for the extension of the northern railway line, \$212,010 for the construction of branch lines of the southern railway, \$1,717,355 for the irrigation project now under construction, \$48,877 for Bangkok waterworks, and \$321,252 for the completion of the new royal yacht.

BRITISH STATIONMASTERS IN CONFERENCE.—A conference of stationmasters and freight agents, held recently at the Great Eastern Hotel, Liverpool street, elected a committee representative of all stations in the United Kingdom to meet the Railway Executive Committee to present their case for a general all-round improvement in conditions of employment. The conference was attended by 120 delegates, and was the first of its kind to be held.

CAST STEEL PILOT AND ASH PAN

The cast steel pilot and ash pan which are illustrated are products of the Commonwealth Steel Company, St. Louis, Mo. The pilot can be quickly applied, removed, raised or lowered, one means provided for raising or lowering it being a rack. This construction permits the alteration in height to be attained in a few minutes. The racks on the backs of the pilots are made to fit corresponding racks on the pilot beams, or on separate brackets fastened to the pilot beams.

These adjustable pilots are cast in one piece and can readily be made to meet the requirements of new or old loco-



Commonwealth Cast Steel Pilot

motives. They are strong, simple and durable, requiring practically no repairs, and in time make quite a saving in maintenance cost, as compared with other types. They are easily repaired when bent in case of wreck. One of the designs embraces the requirements for both road and switch engines, a long step being placed at either side to meet switch engine requirements when a road engine is used in yard switching. They meet all Government requirements.

The cast steel ash pan is made for both single and double hoppers. These ash pans do away with the frequent expensive renewals and repairs characteristic of other types, as



Commonwealth Cast Steel Ash Pan

they are so designed that they do not burn out. They also prevent live coals from scattering on the roadway and causing fires. As these pans do not warp, a tight door is maintained that retains the coals. They are made up of but a few parts and have that advantage over the built-up types. This type of pan will last a long time and greatly reduces the maintenance costs for this particular part of the locomotive.

WOMAN BRANCH SECRETARY OF THE N. U. R.—The first woman branch secretary of the National Union of Railwaymen of England has been appointed at Ashton-under-Lyne.

General News Department

The Santa Fe lines paid 21.62 per cent of all the taxes collected in New Mexico during 1916.

The Pennsylvania has made a general increase in the pay of clerks in general offices, said to range from \$5 to \$10 a month per capita and to benefit 5,000 clerks.

The Delaware & Hudson is about to reopen its car shops at Green Island, New York, near Troy, which have been idle for seven years. The company is now trying to get the 100 men needed to organize a force to repair freight cars at these shops.

The Grand Trunk Railway of Canada has agreed to grant the enginemen and firemen on all its lines the benefit of the "eight-hour law" pay now in force in the United States. The employees on the company's lines in the United States already enjoy the rates provided by this law.

The New Jersey Court of Errors and Appeals on October 8 affirmed the decision of the lower court sustaining the order of the State Public Utilities Commission requiring the abolition of sixteen grade crossings on the lines of the Erie Railroad in Paterson. The order issued by the commission allowed eight years for doing the work. If this decision stands it will mean the expenditure of \$3,000,000 or more.

The United States Civil Service Commission announces examinations, November 20, for the positions of passenger rate clerk and express rate clerk; and there are a large number of places to be filled, at salaries of \$100 a month. Applicants, men only, must be at least 20 years old and must have had experience in passenger or express rate work. There will be 100 passenger rate vacancies in the office of the Quartermaster of the army, at Washington, and 20 in the office of the Auditor for the War Department; and 20 vacancies in the position of express rate clerk in the Quartermaster's office. After six months' satisfactory service there will be an increase of pay. The duties of the positions are the revision, preparation and payment of passenger or express transportation accounts. Generally speaking, an experience of two years will be required, but applicants who have had experience in the government service will be required to show only one year of other experience.

Five Hundred Car Builders Wanted

The recruiting sergeant at Altoona, Pa., recently received a message from the War Department, reading as follows:

"Five hundred car builders or car repairmen for work in French railway shops, must be recruited in your district at once. They will be rated from \$33 to \$106 a month." With the message came the information that the men would be assigned to the 35th Engineers of the National Army.

Headlight Suit Dismissed

As briefly reported in last week's issue, Judge Anderson of the United States district court for the district of Indiana, at Indianapolis on October 9 dismissed a complaint of the New York Central against the enforcement of the Interstate Commerce Commission's order requiring the use of high power locomotive headlights. The complaint was dismissed, at the cost of the complainant, on motion of Blackburn Esterline, special assistant to the attorney general, not on the merits of the headlight order but on technicalities regarding the form of the complaint. The bill in equity named the Interstate Commerce Commission and the United States as defendants. The court held that although the United States was named in the title of the bill it was not named in the bill itself and therefore was not a party to the suit; and that all suits to enjoin the enforcement of an order of the Interstate Commerce Commission must be brought against the United States. The court also held that no relief was prayed for against the United States. The government had also argued that the suit could not be maintained against the commission, in

the form in which it was brought, in the jurisdiction of the district of Indiana. The railroad was represented by C. C. Paulding, J. B. Cockrum and F. H. Schmidt. An argument was also made on behalf of the Pennsylvania by S. O. Pickens.

A Canadian Railroads' War Board

The creation of a railway supervisory board composed of representatives of the Canadian Pacific, the Grand Trunk and the Government Railways (shortly to embrace the Canadian Northern) is under consideration by the Canadian Government. The board would work toward co-ordination of effort to prevent freight congestion and to facilitate the expeditious handling of traffic during the war. Co-ordination with United States lines is also proposed. The standardization of the size of rails on various railroads is likewise being considered.

Aishton Praises Press

"It is a great satisfaction to me to be able to say that the press of the country has been within recent months helping the railroads most generously and effectively." This statement was made at Chicago on October 12 at the convention of Associated Business Papers by R. H. Aishton, president of the Chicago & North Western and chairman of the central department of the Railroads' War Board.

"The only possible solution of our problem was to increase the amount of service of every mile of track, every engine and every car. We had to secure the co-operation of shippers in loading and unloading. To save men and fuel for freight service we had to make reductions in passenger service which, up to the present time, amount to 25,000,000 passenger train miles a year. To secure the good will and co-operation of the public the railroads had to get the reasons before the public, and both the railways and the nation owe a debt of gratitude to the press for the generous way in which it has told and commended what the railways have accomplished.

"There remains a great deal more which the press can do. Shortage of labor and material makes it extremely difficult to maintain our cars and engines and it is impossible to get new equipment. It is almost impossible to get rails. You will see that if the war goes on it is going to become more and more difficult to meet satisfactorily the demands of the public. If this is the case, the railways will need the help of the press more and more. . . . Use your powerful influence to get the business interests to co-operate with the managements of the railways in every way. . . ."

Pacific Railway Club Entertains Japanese Railway Men

The Japanese government, in anticipation of the widening of the gage of the government owned lines from 3 ft. 6 in. to 4 ft. 8½ in., has sent to this country a commission of prominent railway officers to investigate American operating methods. It is proposed to spend many millions of dollars upon this work and the commission is looking into all phases of railway construction, maintenance and operation.

During the first days of its stay in this country the commission visited the terminals of the Southern Pacific on San Francisco Bay and its shops at Sacramento, Cal., various industrial plants in the vicinity of San Francisco and the three-rail line of the Northwestern Pacific.

On October 11 the commissioners were the guests of the board of governors of the Pacific Railway Club at a banquet, where over 200 members of the club were present. G. H. Binkley, president, and William S. Wollner, executive secretary, welcomed the visitors. Dr. Y. Shima, the chairman of the Japanese commission and chief mechanical engineer of the Japanese Government Railways, responded.

Two papers on railway maintenance were presented by

members of the club: H. B. Titcomb, maintenance of way assistant of the Southern Pacific, speaking on "Maintenance of Way, Its Organization and Problems," and G. W. Rear, general bridge inspector of the same company, on "Maintenance of Structures." There was a general discussion of the topic, followed by informal talks on car loading efficiency, in which both the members and the visitors took an active part.

The commission left San Francisco for Los Angeles the following day and will go from there to various points throughout the United States. They are being accompanied by Ellwood G. Babbitt of the United States Bureau of Foreign and Domestic Commerce.

Steel Prices Reduced

An agreement between the War Industries Board and representatives of the steel interests fixing maximum prices on a number of steel articles, supplementing the basic prices covered by the agreement of September 24, was announced on October 11 with the approval of the President. The prices, which become effective immediately and are subject to revision on January 1, are as follows:

Commodity	Price agreed upon	Base
Blooms and billets 4 in. by 4 in. and larger..	\$47.50 g.t.	Pittsburgh and Youngstown
Billets under 4 in. by 4 in.....	51.00 g.t.	Pittsburgh and Youngstown
Slabs	50.00 g.t.	Pittsburgh and Youngstown
Sheet bars	51.00 g.t.	Pittsburgh and Youngstown
Wire rods	57.00 g.t.	Pittsburgh
Shell bars	3.25 per 100 lb.	"
{ 3 in. to 5 in.....	3.50 " "	"
{ Over 5 in. to 8 in.....	3.75 " "	"
{ Over 8 in. to 10 in.....	4.00 " "	"
{ Over 10 in.....	2.90 " "	"
Skelp.....	3.15 " "	"
{ Grooved	3.15 " "	"
{ Universal	3.25 " "	"
{ Sheared	3.25 " "	"

It is stated that the prices enumerated have been fixed by the President on the assurance of those representing the steel industry that these prices equitably adjust the relations of the steel interests to each other, and will assist them in fulfilling their obligations to give the country 100 per cent of production at not to exceed the prices heretofore announced.

Measures will be taken by the War Industries Board for placing orders and supervising the output of the steel mills in such manner as to expedite the requirements for war purposes of the government and those nations associated with us, and to supply the needs of the public according to their public importance and in the best interest of all, as far as practicable.

Interstate Commerce Commission Reorganization

The Interstate Commerce Commission on Wednesday issued an order announcing its reorganization into three divisions, under the authority of the law increasing its membership to nine.

Except as otherwise provided by the commission Commissioners McChord, Meyer and Aitchison will constitute Division 1; Commissioners Clark, Daniels and Woolley will constitute Division 2; and Commissioners Harlan, Hall and Anderson will constitute Division 3. Each will have power and authority by a majority thereof to hear, determine, order, certify, report, or otherwise act as to any of the work, business or functions assigned or referred to it. Any division, with regard to any case or matter assigned to it, or any question brought to it under this delegation of duty and authority, may call upon the whole commission for advice and counsel, or for consideration of the case or question by an additional commissioner or commissioners assigned thereto by the whole commission; and the commission may bring before it as such any case or question so allotted or assigned.

To Division 1 will be assigned all cases set for argument beginning October 24, to and including October 31, 1917, and in addition Division 1 will be charged with the conduct of the work of the Bureau of Valuation other than considering and deciding the proceedings relating to the valuation of carriers' property. To Division 2 will be assigned all cases set for argument beginning November 1 to and including November 30, 1917, and in addition Division 2 will be charged with the disposition of applications and requests for suspension under the fifteenth section; of applications under the fourth and sixth sections; of cases on the special docket; of the transportation of explosives and dan-

gerous articles; and of tariffs carrying released rates. To Division 3 will be assigned all cases set for argument beginning December 1 to and including December 31, 1917, and in addition Division 3 will be charged with the disposition of all Board of Review cases which have been submitted and those not hereafter orally argued before the commission or any division thereof.

All cases set for argument and all cases submitted, other than Board of Review cases, in any one month after January 1, 1918, will be assigned in monthly rotation to the respective divisions in the order given above. Matters arising in connection with assigned cases will be disposed of by the division to which such cases have been assigned. All procedural questions requiring commission action arising in connection with unassigned cases may be disposed of by any of the divisions. Miscellaneous administrative matters requiring commission action, not otherwise provided for, may be disposed of by any division. The foregoing assignment does not include the consideration and disposition of valuation cases because the law provides that at least seven members shall participate in such cases. Each division may determine the time and place for its hearings and conferences and determine its order of business.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—W. L. Connelly, Superintendent of Telegraph, Indiana Harbor Belt, Gibson, Ind. Next meeting, November 22, La Salle Hotel, Chicago.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Morrison Hotel, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial Annex Hotel, Pittsburgh.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Club has been suspended until after the war.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.
- TRAFFIC CLUB OF CHICAGO.—C. B. Signer, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.
- WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, Acting Secretary, 1735 Monadnock Block, Chicago, Ill. Regular meeting, first Monday in month, except January, July and August. Extra meetings generally on other Monday evenings except in July and August.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST, 1917

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equipment.	Traffic.								Trans- portation.
Alabama & Vicksburg.....	143	\$114,276	\$47,060	\$175,326	\$30,519	\$28,078	\$5,014	\$57,026	\$5,886	\$125,902	\$49,424	\$10,700	\$38,724	\$13,364
Alabama Great Southern.....	312	427,250	167,733	631,833	74,449	137,440	15,960	196,985	14,546	434,848	166,985	36,046	160,933	21,477
Ann Arbor.....	293	205,581	64,283	293,093	23,273	36,815	8,548	112,611	8,548	190,589	190,589	13,100	89,489	34,698
Arizona Eastern.....	378	200,161	44,713	273,878	45,201	35,690	2,442	66,882	16,402	172,676	101,402	22,396	78,740	80,522
Atchafalpa, Topeka & Santa Fe.....	8,639	8,694,904	2,705,367	12,374,162	1,588,744	1,990,939	194,104	3,559,057	235,257	7,545,770	4,828,392	592,669	4,234,759	236,602
Atlanta & West Point.....	93	76,077	67,398	160,037	14,611	24,633	6,002	54,327	4,938	106,617	53,420	7,748	45,654	15,502
Atlanta, Birmingham & Atlantic.....	640	222,173	69,370	318,227	51,047	57,660	15,253	145,148	9,970	279,112	39,114	13,700	25,407	26,521
Atlantic & St. Lawrence.....	167	75,364	31,800	118,009	41,296	38,885	4,577	95,398	6,249	186,404	137,951	10,721	79,116	120,787
Atlantic Coast Line.....	4,783	2,254,037	876,620	3,353,674	433,737	64,188	5,967	1,282,721	76,399	2,531,780	83,894	220,000	602,498	87,266
Baltimore & Ohio.....	4,937	9,786,613	2,040,296	12,869,705	1,655,778	2,313,136	203,010	5,265,426	292,082	9,802,826	3,066,878	335,601	2,730,425	180,343
Baltimore & Ohio Chicago Terminal.....	79	105,332	870	183,488	30,885	29,869	1,032	110,876	14,458	189,063	103,04	18,360	23,951	26,767
Baltimore, Chesapeake & Atlantic.....	88	105,332	74,550	189,732	8,365	45,985	1,722	84,598	2,434	143,102	75,42	46,340	43,996	8,054
Bangor & Aroostook.....	632	195,955	31,378	297,103	50,186	61,552	4,344	90,602	11,838	223,131	73,972	15,000	58,972	894
Belt Ry. Co. of Chicago.....	31	340,126	.....	350,520	24,468	56,300	1,330	155,104	6,783	244,186	46,66	100,35	99,641	6,102
Bessemer & Lake Erie.....	208	1,448,038	52,253	1,524,039	190,731	260,896	11,936	406,572	23,938	872,297	651,742	42,788	608,954	144,420
Bingham & Garfield.....	36	288,058	4,662	295,397	27,573	40,871	1,050	43,723	3,104	116,329	39,37	179,068	157,895	24,757
Birmingham Southern.....	44	66,574	1,880	94,085	15,674	31,070	812	49,262	3,550	100,367	106,68	21,173	8,673	22,815
Boston & Maine.....	2,305	3,148,974	1,859,940	5,599,912	582,350	701,315	36,182	2,513,799	117,375	3,982,088	71,11	1,617,834	1,446,538	257,405
Buffalo & Susquehanna R. R. Corporation.....	253	1,388,898	6,333	1,667,765	22,943	40,111	1,844	49,450	6,721	1,288,069	76,33	39,696	34,942	11,376
Buffalo, Rochester & Pittsburgh.....	587	1,278,196	130,033	1,455,186	156,013	342,932	16,505	520,019	28,782	1,066,370	73,28	33,000	355,656	13,332
Canadian Pacific Lines in Maine.....	234	63,021	31,082	107,276	66,983	22,321	5,655	54,663	3,781	153,404	142,99	13,500	59,629	45,431
Carolina, Clinchfield & Ohio.....	283	346,687	31,983	386,553	43,691	53,351	16,537	77,881	13,041	204,541	182,012	13,400	168,612	137,412
Carolina, Clinchfield & Ohio of S. C.....	18	16,259	2,214	18,978	2,058	107	2,471	4,162	1,130	9,928	52,31	600	8,450	8,946
Central of Georgia.....	1,919	798,267	398,706	1,318,030	220,463	248,727	38,626	438,036	39,789	983,486	74,62	334,544	242,125	36,296
Central of New Jersey.....	684	2,376,601	854,392	3,520,261	285,000	512,061	40,161	1,322,410	85,385	2,254,323	64,04	1,265,937	150,163	199,984
Central New England.....	301	442,035	33,015	490,707	71,233	48,145	1,384	171,787	10,810	305,881	62,33	19,000	165,747	98,368
Central Vermont.....	411	252,041	105,392	401,200	50,411	69,746	11,183	200,959	13,748	348,543	86,87	52,657	32,089	33,460
Charleston & Western Carolina.....	343	150,336	45,879	205,559	32,160	24,281	4,422	65,468	3,655	130,036	63,26	7,523	65,523	36,051
Chesapeake & Ohio Lines.....	2,379	3,670,432	765,209	4,735,956	653,814	845,906	55,833	1,478,758	97,702	3,157,640	66,67	1,578,319	1,388,276	164,826
Chicago & Alton.....	1,053	1,280,421	503,287	1,910,441	219,559	392,910	41,898	577,717	34,945	1,268,190	64,221	61,650	580,422	70,028
Chicago & Eastern Illinois.....	1,131	1,371,131	338,934	1,856,104	201,359	451,206	28,224	671,885	45,277	1,401,187	75,49	454,919	383,140	97,085
Chicago & Erie.....	270	643,680	50,074	767,792	95,086	102,376	19,523	364,348	18,393	596,927	77,74	170,864	167,658	167,658
Chicago & North Western.....	8,108	6,533,241	2,568,346	10,153,027	1,353,935	1,633,626	122,367	3,751,083	184,369	7,098,987	69,90	3,055,840	2,630,758	301,317
Chicago, Burlington & Quincy.....	9,373	7,571,632	2,467,823	10,966,606	1,244,801	1,798,614	150,699	3,552,480	231,419	7,085,711	64,67	3,870,895	3,439,005	674,461
Chicago, Detroit & Can. Grd. Trk. Jctn.....	60	89,621	21,609	134,275	10,726	16,400	1,568	57,384	2,794	88,872	66,19	3,546	45,403	30,722
Chicago Great Western.....	1,496	963,855	380,778	1,469,080	254,530	244,450	46,454	511,671	36,694	1,105,247	75,23	363,838	59,000	126,787
Chicago, Indianapolis & Louisville.....	654	547,706	211,622	822,096	97,378	161,221	19,657	291,342	17,478	588,537	71,59	388,537	197,979	74,514
Chicago Junction.....	13	.....	283,116	283,116	30,680	24,990	1,298	145,552	5,388	228,441	80,68	54,675	51,382	3,978
Chicago, Milwaukee & St. Paul.....	10,286	7,062,301	2,445,290	10,500,802	1,168,652	2,206,382	130,457	3,979,320	181,273	7,681,037	73,15	2,819,766	597,705	1,077,259
Chicago, Peoria & St. Louis.....	255	149,706	30,861	189,730	25,391	49,144	6,414	75,945	6,094	162,988	85,90	26,742	19,992	1,094
Chicago, Rock Island & Gulf.....	479	201,786	77,091	298,963	41,913	41,147	10,442	91,979	8,776	195,430	65,37	103,533	90,320	22,922
Chicago, Rock Island & Pacific.....	7,822	4,689,805	2,254,358	7,519,819	996,741	1,579,934	137,101	2,633,656	171,563	5,562,926	73,98	1,956,893	313,345	604,065
Chicago, St. Paul, Minn. & Omaha.....	1,753	1,171,071	586,316	1,916,079	270,509	270,509	27,784	788,297	46,399	1,427,998	74,49	488,681	378,272	109,474
Chicago, Terre Haute & Southeastern.....	374	313,367	21,859	344,096	44,516	100,209	4,852	104,414	8,901	265,845	77,26	78,252	48,848	24,113
Cincinnati, Indianapolis & Western.....	322	139,216	54,210	218,324	31,239	39,401	5,820	89,351	7,583	173,766	44,557	10,166	34,391	24,901
Cincinnati, New Orleans & Tex. Pacific.....	337	839,142	254,868	1,163,125	75,528	249,265	27,903	368,491	20,260	744,136	63,98	418,989	95,425	6,205
Cincinnati Northern.....	246	207,543	21,574	237,490	28,383	29,341	3,371	79,884	3,101	142,127	59,85	95,363	88,347	18,482
Cleveland, Cincinnati, Chic. & St. Louis.....	2,387	3,389,006	1,240,290	5,014,065	422,691	865,672	87,356	1,792,461	87,851	3,281,726	65,45	1,732,339	185,000	156,579
Coal & Coke.....	197	80,161	25,154	109,794	28,275	25,347	788	39,374	2,959	96,743	88,11	6,000	7,051	6,554
Colorado Midland.....	338	97,367	29,761	138,421	63,985	27,249	6,785	62,608	5,303	167,543	121,04	6,781	35,902	.....
Colorado & Southern.....	1,103	725,924	226,895	1,008,220	80,764	158,427	11,048	280,716	26,095	564,107	444,113	45,000	399,045	132,293
Colorado & Wyoming.....	43	33,710	2,645	36,945	9,072	18,420	1,119	31,138	1,454	58,295	55,95	4,100	42,020	7,951
Cripple Creek & Colorado Springs.....	86	83,699	26,776	117,104	12,311	15,911	2,111	27,093	3,113	55,406	48,98	50,788	55,681	412
Cumberland Valley.....	164	355,013	67,498	441,218	30,558	43,120	5,041	147,786	9,260	235,804	53,44	14,847	190,567	53,784
Delaware & Hudson Co.—R. R. Dept.....	879	2,356,276	397,313	2,946,281	191,330	469,200	29,642	1,086,276	93,489	1,879,418	63,79	1,066,863	62,200	298,188
Delaware, Lackawanna & Western.....	955	3,599,732	957,434	5,0979										

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST, 1917—Continued

Name of road.	Average mileage operated during period.	Operating revenues—			Maintenance of way and structures—		Operating expenses—			Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.		
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Traffic.	Trans- portation.	General.	Total.						
Georgia, Southern & Florida.....	402	\$132,792	\$77,255	\$231,281	\$36,654	\$6,798	\$84,337	\$9,087	\$193,161	83.52	\$38,120	\$16,542	\$21,578	—\$14,789	
Grand Rapids & Indiana.....	575	380,251	227,804	608,055	88,186	11,210	247,322	21,057	422,991	65.50	213,071	21,200	191,871	38,601	
Grand Trunk Western.....	347	626,000	156,000	782,000	102,882	17,132	361,011	21,460	459,980	77.94	186,748	37,235	149,513	—13,115	
Great Northern.....	808	5,884,369	1,535,758	7,420,127	817,031	110,967	2,788,846	133,934	5,088,846	62.25	3,066,462	455,585	2,610,877	—772,212	
Gulf & Ship Island.....	308	185,217	47,535	232,752	30,570	3,141	61,174	7,417	132,879	53.85	113,860	19,743	94,115	28,893	
Gulf, Colorado & Santa Fe.....	1,937	929,022	358,541	1,387,563	257,503	29,006	442,577	50,767	1,018,106	73.70	363,291	64,154	299,137	—102,713	
Gulf, Mobile & Northern.....	402	203,565	31,727	235,292	42,084	3,847	70,998	11,563	158,976	64.17	98,747	8,416	90,331	22,706	
Hocking Valley.....	349	907,592	99,168	1,006,760	171,188	8,992	323,877	20,364	455,976	60.90	427,582	101,000	326,582	50,190	
Houston, East & West Texas.....	191	98,326	41,164	139,490	16,401	1,732	46,821	3,804	82,577	55.41	66,439	6,194	60,227	19,280	
Houston & Texas Central.....	949	441,543	159,233	600,776	64,808	16,855	214,515	19,979	400,600	62.03	245,208	32,451	212,757	—3,717	
Illinois Central.....	4,766	5,508,944	1,510,671	7,019,615	1,099,625	174,193	2,476,069	180,379	5,626,737	72.58	1,216,183	610,975	1,514,478	43,865	
Indiana Harbor Belt.....	109	649,346	271,347	920,693	447,798	56,957	35,162	9,970	320,454	71.56	127,344	8,922	118,422	—29,556	
International & Great Northern.....	1,160	3,037,152	1,037,152	4,074,304	195,656	18,245	361,276	30,235	709,784	68.44	327,368	23,000	304,368	105,494	
Kanawha & Michigan.....	177	309,317	42,346	351,663	37,752	81,005	95,801	7,725	226,804	62.28	137,370	17,100	120,270	15,811	
Kansas City, Mexico & Orient.....	272	91,843	15,330	107,173	19,222	24,939	5,271	48,905	5,851	92.14	8,886	6,000	2,886	—9,441	
Kansas City, Mexico & Orient of Texas.....	465	68,730	16,968	85,698	16,577	21,839	31,816	41,285	88,738	97.98	1,832	6,000	—4,188	—15,766	
Kansas City Southern.....	755	807,133	170,068	977,201	106,863	95,949	24,267	335,997	31,369	648,340	60.77	418,522	50,659	367,863	36,729
Kansas City Terminal Co.....	23	.....	.....	.....	9,299	20,908	.....	35,690	67,656	70.27	28,622	18,536	10,086	—77,853
Lake Erie & Western.....	900	622,538	66,211	688,749	97,439	140,308	15,804	281,273	549,854	75.85	175,103	32,500	142,603	—78,056	
Lehigh & Hudson River.....	97	202,468	6,008	208,476	17,571	29,208	1,503	82,116	136,011	61.41	85,474	5,600	79,874	18,901	
Lehigh & New England.....	296	344,545	1,191	360,302	36,398	44,086	3,926	107,480	200,631	55.68	159,671	20,250	139,421	55,142	
Lehigh Valley.....	1,443	3,983,962	535,054	4,519,016	486,856	76,512	2,085,554	93,693	3,598,206	73.93	1,268,650	206,390	1,062,260	—144,903	
Long Island.....	397	449,865	1,313,337	1,763,202	160,855	17,849	650,799	31,825	1,044,070	52.36	949,896	76,143	873,752	197,080	
Los Angeles & Salt Lake.....	1,153	626,412	319,608	946,020	122,521	32,088	284,870	23,101	626,516	60.03	417,182	55,385	361,797	—21,905	
Louisiana & Arkansas.....	302	127,786	26,587	154,373	27,792	24,478	3,768	43,075	102,792	64.13	57,495	10,446	47,049	13,259	
Louisiana Ry. & Navigation Co.....	342	164,121	45,040	209,161	24,042	33,311	5,969	79,684	149,023	67.55	71,579	19,192	52,345	—4,310	
Louisiana Western.....	208	209,075	75,617	284,692	16,835	34,630	7,138	59,179	127,802	42.51	172,797	17,181	155,616	84,221	
Louisville & Nashville.....	5,070	4,838,364	1,541,248	6,379,612	869,249	120,871	2,178,519	115,885	4,637,610	68.49	2,133,669	512,857	1,624,813	—96,268	
Louisville, Henderson & St. Louis.....	200	142,919	50,137	193,056	20,304	28,810	4,766	68,127	130,299	64.09	73,006	4,300	68,701	19,283	
Maine Central.....	1,216	703,351	465,666	1,169,017	155,775	12,697	553,238	27,106	929,756	71.93	362,754	58,706	304,044	—61,621	
Michigan Central.....	1,862	2,771,345	1,353,837	4,125,182	561,731	701,384	73,000	1,714,662	3,186,144	68.62	1,457,028	188,000	1,269,028	—84,106	
Midland Valley.....	382	201,108	58,085	259,193	48,242	28,089	72,491	8,123	159,933	59.09	110,740	5,504	105,236	56,947	
Mineral Range.....	120	102,128	110,376	212,504	24,758	17,204	460	51,184	94,663	85.76	15,173	3,000	12,173	—3,356	
Minneapolis & St. Louis.....	1,647	705,188	193,315	898,503	127,004	18,702	360,577	22,513	690,223	71.80	271,142	45,692	225,450	—71,621	
Minn., St. Paul & Sault Ste. Marie.....	4,228	2,228,979	623,778	2,852,757	375,056	439,246	45,713	1,110,798	58,508	66.09	1,047,324	145,075	902,249	—486,628	
Missouri & North Arkansas.....	365	77,886	51,455	129,341	22,481	20,809	4,058	5,547	97,821	70.77	40,403	5,500	34,900	—27,159	
Missouri, Kansas & Texas System.....	3,865	2,539,968	1,013,286	3,553,254	342,917	807,157	67,229	1,224,708	2,585,927	67.89	1,223,134	136,901	1,086,233	384,372	
Missouri, Okla. & Gulf.....	332	125,684	29,410	155,094	20,974	29,193	3,588	61,898	122,911	74.57	41,907	9,340	32,571	19,770	
Missouri, Okla. & Gulf of Texas.....	9	25,759	550	275,709	1,186	1,411	3,416	916	8,046	30.37	18,444	184	18,260	13,569	
Missouri Pacific.....	7,301	4,976,869	1,410,326	6,387,195	1,025,946	136,691	2,186,858	143,244	4,573,544	66.34	2,321,021	300,000	2,021,544	.....
Mobile & Ohio.....	1,160	982,588	143,062	1,125,650	319,278	38,739	426,860	31,423	950,638	79.54	244,515	52,869	191,646	7,069	
Monongahela Connecting.....	108	162,735	18,493	181,228	45,624	12,188	52,942	5,243	117,099	62.98	68,816	6,000	62,816	—21,375	
Monongahela.....	60	388,237	120,831	509,068	31,614	333	84,918	4,378	145,969	109.07	12,143	1,827	13,971	57,790	
Morgan's L. & Tex. R. R. & S. Co.....	401	871,029	344,797	1,215,826	67,990	83,461	10,756	156,450	324,373	61.41	210,119	31,023	178,806	99,598	
Nashville, Chattanooga & St. Louis.....	1,237	871,029	344,797	1,215,826	143,966	260,803	49,474	33,549	996,381	76.34	308,828	30,000	278,828	—62,249	
Nevada Northern.....	165	188,179	18,439	206,618	20,186	24,763	798	36,709	88,108	41.56	123,915	12,014	111,901	103	
New Orleans & North Eastern.....	203	268,708	83,344	352,052	49,313	9,575	154,910	9,711	320,997	81.22	74,239	34,268	39,971	—48,129	
New Orleans Great Northern.....	285	153,795	36,642	190,437	16,563	28,567	107,882	6,787	107,882	54.69	89,344	10,042	79,342	882	
New Orleans, Texas & Mexico.....	191	80,067	25,187	105,254	18,692	24,217	30,685	6,119	83,806	77.03	24,994	1,400	23,588	1,333	
New York Central.....	6,082	12,979,674	5,700,106	18,679,780	2,517,669	378,149	7,837,353	434,380	13,510,164	70.03	6,484,133	896,617	5,587,517	—1,549,366	
New York, Chicago & St. Louis.....	572	1,312,837	145,455	1,458,292	124,689	239,724	624,624	39,209	1,084,323	70.75	448,205	55,000	393,205	129,065	
New York, New Haven & Hartford.....	1,998	3,420,622	3,294,949	6,715,571	774,991	1,115,415	3,105,101	119,588	5,299,360	69.72	2,301,511	240,000	2,061,511	—304,911	
New York, Ontario & Western.....	1,568	562,193	396,749	958,942	103,286	154,925	338,035	17,866	626,972	56.30	486,663	30,000	456,663	79,780	
New York, Philadelphia & Norfolk.....	112	400,754	86,970	487,724	16,394	88,881	239,598	9,320	369,592	68.91	166,717	19,173	147,544	31,110	
New York, Susquehanna & Western.....	136	236,743	54,535	291,278	31,474	38,080	4,919	164,658	244,586	75.66	78,647	16,167	62,480	—15,783	
Norfolk & Western.....	2,085	5,049,539	750,148	5,800,687	632,570	74,135	1								

REVENUES AND EXPENSES OF RAILWAYS

1917—Continued

MONTH OF AUGUST, 1917—Continued													
Name of road.	Average mileage operated during period.	Operating revenues—			Operating expenses—			Net railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) with last year.		
		Freight.	Passenger.	Total (inc. misc.).	Way and structures.	Maintenance of equip-ment.	Traffic.					Trans- portation.	General.
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	\$131,16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
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St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
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St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
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St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
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St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,793	\$108,285	\$29,327	\$3,113	\$67,537	\$6,371	\$217,457	131.16	\$8,830	\$132,526
St. Joseph & Grand Island.....	258	\$115,854	\$33,027	\$165,7									

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR, 1917—Continued

Name of road.	Average mileage operated during period.	Operating revenues.			Maintenance of way and structures.		Operating expenses.			Operating ratio.	Net railway operating.	Railway tax accruals.	Operating income (or decr., or loss).	Increase (or decr., or loss) last year.
		Freight.	Passenger.	Total.	Way and structures.	Equip-ment.	Traffic.	Trans- portation.	General.						Total.
Chicago Great Western.....	1,496	\$7,329,744	\$2,399,441	\$10,682,062	\$1,448,839	\$1,805,287	\$366,930	\$4,111,319	\$341,558	\$8,158,007	\$431,000	\$2,084,978	—\$73,927	
Chicago, Indianapolis & Louisville.....	654	4,125,582	1,353,240	5,478,822	546,617	1,038,352	157,783	2,208,544	148,248	4,120,623	293,726	1,546,914	—41,435	
Chicago Junction.....	13	.....	.....	.....	2,152,200	250,435	198,307	1,833,649	43,909	1,877,558	279,569	254,723	—69,506
Chicago, Milwaukee & St. Paul.....	10,238	51,198,784	13,593,572	72,792,356	6,975,022	13,113,031	1,161,917	30,556,006	1,377,425	53,264,412	4,015,630	15,682,237	—3,010,344	
Chicago, Peoria & St. Louis.....	255	1,141,186	188,091	1,329,277	170,966	302,657	97,947	592,298	47,279	1,161,147	235,500	64,740	17,117	
Chicago, Rock Island & Gulf.....	479	1,742,378	511,771	2,254,149	338,402	342,419	82,759	810,262	73,415	1,656,539	764,745	171,142	164,166	
Chicago, Rock Island & Pacific.....	1,703	36,774,903	13,735,560	50,510,463	2,479,108	2,851,584	1,090,122	20,754,959	1,500,618	41,641,529	2,503,174	10,624,765	—1,999,514	
Chicago, St. Paul, Minn. & Omaha.....	7,753	8,764,436	3,640,960	12,405,396	1,646,879	1,949,334	229,209	5,602,320	361,608	9,903,980	3,665,173	804,663	2,856,192	
Chicago, Terre Haute & Northwestern.....	375	2,210,163	139,890	2,350,053	249,121	543,781	34,605	1,773,422	66,434	1,773,422	333,789	508,214	209,656	
Cincinnati, Indianapolis & Western.....	322	1,249,593	363,337	1,612,930	223,197	291,667	54,138	734,679	61,050	1,386,406	69,317	312,188	9,021	
Cincinnati, New Orleans & Texas Pacific.....	337	6,177,941	1,820,496	8,000,437	658,644	1,944,063	229,989	2,668,314	158,951	5,715,872	2,424,731	449,325	93,500	
Cincinnati, Northern & Texas Pacific.....	246	1,387,751	122,394	1,510,145	267,293	267,293	25,070	607,050	25,390	1,163,886	343,174	165	165	
Cleveland, Cincinnati, Chic. & St. Louis.....	2,387	23,551,597	7,505,143	31,056,740	3,020,184	6,258,985	658,938	13,536,299	695,425	24,428,390	9,315,927	8,315,182	—354,747	
Coal & Coke.....	197	676,834	147,580	824,414	162,580	131,379	9,533	331,692	23,415	741,599	116,762	42,000	74,762	
Colorado Midland.....	338	287,213	66,604	353,817	382,373	123,355	20,165	169,308	12,247	400,799	20,342	—38,769	.....
Colorado & Southern.....	1,103	5,339,151	1,188,016	6,527,167	681,148	1,195,818	91,850	2,121,713	209,583	4,342,104	359,737	2,314,698	720,734	
Colorado & Wyoming.....	43	259,089	20,163	279,252	70,409	70,409	1,010	260,693	33,291	479,303	27,977	302,862	7,678	
Cripple Creek & Colorado Springs.....	86	625,447	119,443	744,890	66,445	86,196	12,228	1,878,311	24,558	3,772,260	49,31	362,357	—54,032	
Cumberland Valley.....	164	2,597,778	456,885	3,054,663	2,029,011	3,977,865	34,783	1,014,170	81,693	1,647,704	112,697	1,436,783	354,197	
Delaware & Hudson Co.—R. Dept.....	879	16,539,945	2,029,011	18,568,956	1,725,201	2,957,865	212,964	8,093,724	719,311	14,801,316	497,600	4,328,723	—886,008	
Delaware, Lackawanna & Western.....	955	27,778,177	5,967,303	33,745,480	3,046,113	5,703,513	646,003	13,819,286	716,545	24,243,632	2,064,928	11,461,705	—110,213	
Denver & Rio Grande.....	2,578	13,908,794	2,930,928	16,839,722	2,270,506	3,238,496	312,883	5,635,648	541,146	12,272,484	761,011	4,999,211	—696,445	
Denver & Salt Lake.....	255	1,062,722	235,933	1,298,655	375,968	375,968	19,240	375,968	40,533	1,398,125	66,000	119,963	322,105	
Detroit & Mackinac.....	385	593,869	223,188	817,057	109,840	189,081	17,770	338,765	31,591	688,023	64,274	130,724	—73,147	
Detroit & Toledo Shore Line.....	80	1,235,876	.....	1,235,876	65,377	85,752	13,952	389,704	27,241	582,027	58,554	612,123	—8,780
Detroit, Grand Haven & Milwaukee.....	191	1,547,873	301,910	1,849,785	200,349	357,017	43,471	1,321,210	49,183	2,071,474	28,960	97,644	—288,128	
Detroit, Toledo & Ironton.....	441	1,538,439	97,843	1,636,282	176,793	268,546	34,740	994,470	61,328	1,556,598	64,000	129,562	—191,247	
Duluth & Iron Range.....	270	4,112,011	166,410	4,278,421	4,423,645	593,276	4,921,921	12,228	1,878,311	24,558	3,772,260	25,464	362,357	—54,032
Duluth, Missabe & Northern.....	414	8,192,166	264,163	8,456,329	1,188,759	882,805	25,351	1,848,333	307,797	4,263,769	735,532	3,934,204	—705,376	
Duluth, South Shore & Atlantic.....	600	1,997,708	183,600	2,181,308	2,877,016	552,977	3,429,993	58,974	1,218,456	69,180	2,298,214	124,199	454,588	—89,538
Duluth, Winnipeg & Pacific.....	191	1,217,242	193,136	1,410,378	144,516	176,164	21,531	1,020,790	59,781	1,020,790	72,277	352,845	—62,772	
Elgin, Joliet & Eastern.....	802	9,867,494	1,091,383	10,958,877	1,091,383	1,091,383	2,182,766	65,656	3,597,155	208,415	7,488,720	382,846	2,711,834	—565,111
El Paso & Southwestern Co.....	1,028	7,171,392	1,688,701	8,860,093	861,525	1,097,351	163,361	2,467,082	236,561	4,994,116	309,142	4,086,885	463,086	
El Paso & Southwestern Co.....	1,988	34,699,986	6,480,481	41,180,467	4,444,896	11,173,357	15,622,253	776,596	20,911,347	1,025,378	38,422,234	1,795,880	5,908,868	—4,587,015
Erie.....	765	3,027,740	1,934,297	4,962,037	586,498	539,131	1,125,629	163,478	1,634,737	127,616	2,950,299	310,425	2,604,022	—93,797
Florida East Coast.....	765	3,027,740	1,934,297	4,962,037	586,498	539,131	1,125,629	163,478	1,634,737	127,616	2,950,299	310,425	2,604,022	—93,797
Fort Worth & Denver City.....	454	2,770,359	1,002,391	3,772,750	390,883	713,492	61,644	1,172,457	143,555	2,504,677	157,450	1,338,858	71,333	71,333
Galveston, Harrisburg & San Antonio.....	1,361	8,977,541	2,921,530	11,899,071	1,551,929	1,612,113	3,164,042	263,298	4,073,367	318,819	7,863,191	432,838	4,277,030	2,281,176
Galveston, Wharf.....	314	1,580,276	643,855	2,224,131	240,639	389,268	108,694	985,526	74,196	1,777,645	88,500	238,970	—101,270	
Georgia Southern & Florida.....	334	1,052,459	533,893	1,586,352	259,627	421,317	680,944	58,233	667,048	74,861	1,486,141	103,241	214,431	—52,752
Grand Rapids & Indiana.....	575	2,846,972	1,098,377	3,945,349	327,398	773,495	81,405	1,958,848	153,184	3,504,665	187,257	632,200	—84,094	
Grand Trunk Western.....	347	4,844,816	1,041,283	5,886,099	725,461	1,132,241	131,289	2,787,786	162,701	4,979,123	297,880	1,118,696	—838,211	
Great Northern.....	814	40,849,294	10,855,642	51,704,936	5,677,143	8,006,029	877,146	19,632,723	981,533	38,369,151	3,456,822	14,569,761	—1,422,706	
Gulf, Colorado & Santa Fe.....	1,937	7,997,216	2,109,287	10,106,503	1,034,486	2,078,995	239,636	3,553,903	444,615	7,895,425	492,704	2,443,613	758,554	
Gulf, Colorado & Santa Fe.....	1,937	7,997,216	2,109,287	10,106,503	1,034,486	2,078,995	239,636	3,553,903	444,615	7,895,425	492,704	2,443,613	758,554	
Gulf, Mobile & Northern.....	402	1,208,324	203,056	1,411,380	149,502	208,453	31,379	464,166	69,907	1,025,893	67,357	401,746	31,720	
Hocking Valley.....	350	5,775,738	625,150	6,400,888	6,841,351	601,391	7,442,742	71,658	2,280,475	155,563	4,574,014	496,000	1,764,624	593,341
Houston, East & West Texas.....	191	840,011	256,675	1,096,686	1,174,990	134,579	18,160	374,956	25,366	707,836	52,978	413,369	116,515	
Houston & Texas Central.....	925	3,401,575	1,059,026	4,460,601	4,838,239	674,350	5,512,589	140,574	1,595,506	152,139	2,634,324	262,258	1,368,454	509,032
Illinois Central.....	4,766	41,453,205	10,584,332	52,037,537	5,707,044	11,625,307	17,322,351	869,721	18,492,520	1,339,769	40,059,898	4,120,690	12,517,033	2,775,906
Indiana Harbor Belt.....	109	351,808	397,239	749,047	22,813	1,713,099	78,654	2,634,581	70,279	813,200	—128,373
International & Great Northern.....	1,160	5,304,806	1,718,665	7,023,471	2,562,272	1,551,929	4,114,201	181,541	2,839,858	247,031	5,445,892	265,638	1,850,113	—808,882
Kanawha & Michigan.....	177	1,984,742	260,806	2,245,548	297,676	382,787	680,463	24,368	680,515	59,826	1,645,351	135,198		

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR, 1917—Continued

EIGHT MONTHS OF CALENDAR YEAR, 1917—Continued														
Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of way and structures.		Operating expenses			Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.).	Way and structures.	Equip. ment.	Traffic.	Trans- portation.	General.						Total.
Missouri & North Arkansas.....	365	\$583,507	\$282,834	\$866,341	\$162,168	\$149,144	\$32,332	\$356,918	\$42,687	\$739,254	79.13	\$194,968	\$153,615	\$24,447
Missouri, Kansas & Texas System.....	3,865	18,555,923	6,385,186	24,941,109	4,502,189	5,290,500	532,465	9,737,653	821,247	21,099,305	78.34	5,832,859	4,736,184	2,342,640
Missouri, Oklahoma & Gulf.....	332	980,560	184,138	1,164,698	160,237	217,947	34,229	544,232	59,073	1,017,103	81.69	229,315	156,369	142,225
Missouri, Oklahoma & Gulf of Texas.....	103	170,267	2,884	1,746,995	20,969	16,538	13,048	67,722	12,133	130,429	74.53	44,566	43,084	46,814
Missouri Pacific.....	7,297	14,688,149	3,721,267	18,409,416	2,935,012	3,055,254	423,879	6,363,124	435,542	13,256,963	66.78	6,594,251	830,000	5,761,809
Mobile & Ohio.....	1,160	7,512,826	975,455	8,488,281	958,704	2,082,855	301,879	3,078,969	253,242	6,885,124	74.39	2,301,218	387,163	1,911,832
Monongahela.....	108	1,280,464	105,538	1,386,002	260,937	107,112	7,935	398,702	33,745	807,891	57.07	607,641	48,000	559,439
Monongahela Connecting R. & S. Co.....	6	1,252,211	257,651	1,509,862	257,651	199,071	2,753	630,792	33,501	1,123,768	89.74	128,442	11,456	878,217
Morgan's La. & Tex. R. R. & S. Co.....	401	3,019,409	907,954	3,927,363	449,669	680,703	94,430	1,216,066	102,192	2,509,529	59.60	1,700,528	252,849	1,444,611
Nashville, Chattanooga & St. Louis.....	1,237	6,665,762	2,133,110	8,798,872	1,003,130	1,878,300	441,825	3,672,041	286,590	7,383,282	76.79	2,232,102	240,000	1,998,884
Nevada Northern.....	165	1,442,090	119,180	1,561,270	160,348	164,723	6,033	291,816	40,639	664,351	41.52	935,569	852,000	67,855
New Orleans & North Eastern.....	203	2,247,809	518,262	2,766,071	304,009	596,645	82,534	1,015,319	86,084	2,116,070	69.10	946,339	252,313	694,026
New Orleans Great Northern.....	285	930,618	234,264	1,164,882	127,309	196,494	25,006	378,697	53,617	782,945	63.83	443,706	55,300	387,841
New Orleans Texas & Mexico.....	191	676,433	184,772	861,205	141,510	145,046	37,887	254,744	52,192	782,945	70.55	263,506	252,213	242,110
New York Central.....	6,082	96,551,527	37,226,823	133,778,350	16,727,481	27,315,851	2,072,214	61,441,479	3,575,688	113,378,583	73.00	41,927,859	7,517,021	34,391,048
New York, Chicago & St. Louis.....	571	9,731,057	944,464	10,675,521	944,066	1,680,766	368,135	3,346,640	274,303	8,651,071	77.45	2,518,450	405,000	2,113,329
New York, New Haven & Hartford.....	1,804	27,002,981	21,823,218	48,826,199	5,515,773	7,818,399	358,425	23,756,777	1,590,081	39,888,737	71.17	16,156,361	2,185,000	13,966,348
New York, Ontario & Western.....	568	3,918,654	1,274,466	5,193,120	647,403	1,015,519	74,800	2,425,239	154,422	4,314,403	69.80	1,866,942	180,900	1,675,504
New York, Philadelphia & Norfolk.....	112	2,818,534	398,741	3,217,275	340,807	648,283	40,908	1,441,573	91,888	2,606,891	72.70	978,733	124,130	854,603
New York, Susquehanna & Western.....	136	1,736,534	398,741	2,135,275	196,936	265,919	19,227	1,268,014	45,245	1,794,037	75.09	595,105	129,333	465,175
Norfolk & Western.....	2,085	36,964,118	4,165,559	41,129,677	4,078,675	7,949,235	529,360	13,185,476	779,657	26,338,943	62.23	16,106,857	1,963,000	14,142,784
Norfolk Southern.....	908	2,583,170	3,578,526	6,161,696	432,190	515,104	67,685	1,213,987	159,208	2,388,072	66.73	1,190,434	120,120	1,069,692
Norfolk Western.....	6,517	42,607,986	9,935,655	52,543,641	8,012,965	6,352,147	819,914	17,945,929	1,049,514	34,161,200	59.58	23,179,216	4,124,217	19,046,902
Northwestern Pacific.....	507	1,422,862	1,340,515	2,763,377	465,763	363,896	44,213	1,077,865	84,137	2,040,983	65.46	1,076,930	153,087	923,693
Northwestern Pacific.....	507	1,422,862	1,340,515	2,763,377	465,763	363,896	44,213	1,077,865	84,137	2,040,983	65.46	1,076,930	153,087	923,693
Oahu Ry. & Land Co.....	114	602,974	170,686	773,660	81,789	63,573	6,276	223,533	40,816	415,907	49.10	431,119	60,398	370,721
Oregon Short Line.....	2,307	14,353,949	3,650,268	17,994,217	2,195,423	2,195,423	290,779	5,131,034	624,169	10,706,955	54.78	8,838,334	1,516,122	7,319,665
Oregon Wash. R. R. & Nav. Co.....	2,052	9,331,218	3,323,858	12,655,076	1,612,038	1,612,038	370,779	4,593,624	624,169	9,357,282	66.64	4,683,829	149,183	3,867,987
Panhandle & Santa Fe.....	680	3,616,927	718,356	4,335,283	1,071,020	1,071,020	377,668	1,232,360	102,204	2,717,172	60.07	1,806,430	149,183	1,656,897
Pennsylvania Company.....	1,755	37,001,831	8,884,349	45,886,180	2,336,574	9,884,349	694,594	2,538,489	1,255,082	40,349,333	78.51	11,047,757	2,909,887	8,137,855
Pennsylvania Railroad.....	4,563	118,985,283	33,414,341	152,399,624	20,396,594	33,680,483	1,881,878	67,225,943	4,228,232	129,998,098	76.95	38,948,249	6,642,980	32,292,854
Peoria & Pekin Union.....	19	115,534	45,770	161,304	85,898	115,238	305	489,337	26,374	717,152	88.25	95,473	64,500	30,972
Piedmont, Baltimore & Washington.....	2,250	7,087,642	1,940,011	9,027,653	1,209,096	1,166,563	210,594	3,854,580	255,879	6,708,816	66.24	3,418,978	271,245	3,147,710
Pittsburgh & Lake Erie.....	718	10,416,006	8,211,975	18,627,981	2,556,366	3,970,194	132,323	6,658,883	467,190	15,909,896	77.48	4,635,439	577,556	4,057,883
Pittsburgh & West Virginia.....	225	13,681,615	1,513,142	15,194,757	1,928,975	3,261,650	132,912	5,210,695	295,308	10,869,526	65.24	5,799,419	681,600	5,108,819
Pittsburgh, Cincinnati & Chicago.....	63	575,442	50,786	626,228	90,724	94,777	9,945	216,041	31,605	461,834	68.03	217,034	45,417	171,617
St. Louis, Brownsville & Mexico.....	2,399	34,418,034	8,824,517	43,242,551	5,290,194	9,482,046	811,718	19,361,067	1,157,624	36,488,917	74.99	12,169,003	1,856,517	10,311,651
St. Louis, Merchant's Bridge Terminal.....	9	4,502,211	2,011,829	6,514,040	245,747	117,224	7,494	1,047,769	62,967	1,812,201	115.64	128,867	14,300	114,567
St. Louis, San Francisco & Texas.....	4,752	24,673,126	9,371,133	34,044,259	4,318,365	5,959,637	522,190	12,208,390	1,018,708	23,826,497	64.59	18,226,398	1,536,547	11,312,312
St. Louis, Southwestern System.....	212	5,301,301	1,674,882	6,976,183	139,608	126,872	17,689	351,069	47,167	682,407	69.89	76,719	11,930	64,745
St. Louis, Southwestern System.....	1,754	8,287,196	1,843,080	10,130,276	1,220,136	2,053,954	375,846	3,188,301	377,860	7,234,334	67.32	3,511,035	495,836	3,014,427
St. Louis, Southwestern System.....	732	1,692,063	610,870	2,302,933	496,297	437,587	58,854	1,232,674	113,125	2,330,774	93.46	163,026	120,000	42,395
St. Louis, Southwestern System.....	3,461	13,077,374	4,455,041	17,532,415	2,131,416	3,200,494	621,365	7,147,510	549,830	13,761,404	70.76	5,896,208	878,854	4,798,613
St. Louis, Southwestern System.....	6,983	37,865,344	13,539,315	51,404,659	6,167,799	9,431,692	1,349,547	19,597	33,587	67,262	67.79	18,226,398	2,587,668	15,616,286
St. Louis, Southwestern System.....	278	472,214	229,581	701,795	167,052	68,796	17,874	19,597	33,587	39,178	81.00	147,091	66,120	17,922
St. Louis, Southwestern System.....	7,085	61,949,404	21,265,718	83,215,122	8,409,272	11,985,861	1,417,461	32,146,651	2,149,494	57,275,959	60.70	3,783,329	4,468,414	29,291,009
St. Antonio & Aransas Pass.....	554	2,928,185	1,121,370	4,049,555	507,827	387,625	83,241	727,060	88,341	1,574,543	47.30	3,330,157	464,690	1,864,914
St. Louis, Southwestern System.....	295	813,646	263,347	1,076,993	188,650	188,650	38,981	423,398	57,185	896,231	77.45	261,245	38,401	222,809
St. Louis, Southwestern System.....	295	813,646	263,347	1,076,993	188,650	188,650	38,981	423,398	57,185	896,231	77.45	261,245	38,401	222,809
Tennessee Central.....	2,997	569,653	895,002	1,464,655	300,185	155,980	7,935	770,951	45,008	1,296,233	50.34	1,278,645	265,3	

Traffic News

C. M. Woodward, assistant superintendent of the Boston & Maine at Springfield, Mass., overrun with hundreds of cars of freight awaiting transfer, has sent out an appeal to the schools and colleges for young men and boys who are willing to work in the freight houses on Friday, Saturday and Sunday.

The express companies' embargo against live stock threatened the success of the National Dairy Show at Columbus, Ohio, this week; but in view of the importance of the show as a factor in the campaign to stimulate production, and at the request of the Transportation Department of the Government Food Administration, the express companies so modified their embargoes that the cattle to be used for exhibition purposes were accepted as in former years.

The transportation division of the United States Food Administration is acting to facilitate the marketing of the coming sugar crop in Cuba, which will commence moving about December 15, and at the suggestion of the Food Administration, the Cuban government has lent to the Cuban Railway \$5,000,000 with which to put its road in better condition to properly handle the coming crop. Both the Cuban government and the railway had placed orders in the United States for many needed supplies which they were unable to get filled. These orders were scattered among some 50 business firms in this country. The Food Administration wrote and explained the necessities of the situation, and most of the supplies are now going forward.

The Buffalo, Rochester & Pittsburgh calls on everybody to remember the injunction, "Do your Christmas shopping early." In order to facilitate freight movement, it has been necessary to curtail passenger service. If people, who go to Rochester from the surrounding towns to buy, will begin now to get their Christmas buying out of the way, it will help prevent congestion and crowding of trains during the few days just previous to Christmas. For those who expect to send presents to friends and relatives at a distance, early shopping is imperative. The express service is now working at capacity, business having increased during the past few months 50 per cent. The country has a million men at training camps receiving and sending a large volume of mail, and to get Christmas presents through on time will call for prompt action everywhere.

The United States Geological Survey has issued a statement on coal production in 1917 compared with 1916, pointing out that the shortage of bituminous coal is not due to the failure of the mines to produce more coal than in the past, for the country on September 1 was about a month ahead of last year in output and is expected to finish the year with an increase of 10 per cent over 1916, the banner year, and of 25 per cent over 1915. "The tremendous increase in manufacturing and transportation activity has created a demand certainly greater than the 10 per cent by which production has increased. In the second week of July the average daily production was more than 1,900,000 tons, the highest point ever attained. In the lowest week for the summer, 1,638,000 tons was recorded, and in the first eight months of 1917 the output was 363,500,000 tons, or 37,000,000 tons more than in the first eight months of 1916. In the same period shipments of anthracite increased 16 per cent over those of 1916. Bituminous production in 1916, including coal made into coke, was 502,518,545 tons.

Shipments of anthracite coal for the eight months ending August 31 amounted to 52,291,445 tons, as compared with 44,623,063 in the first eight months of 1916. The increase for the eight months was 7,668,382 tons, or 17.18 per cent; and for the month of August alone it was 28.35 per cent. Shipments to New England, New York City, Philadelphia, Buffalo and Erie have been heavier than during the corresponding period last year. New York received 12,666,650 tons last year, and 13,912,384 this year, a gain of 1,245,734 tons. New England last year got 3,438,242 tons by rail and 2,351,995 by barge, a total of 5,790,237 tons. This year the figures are 4,195,575 by rail and 2,260,366 by barge, a total of 6,455,941 tons, showing a gain of 665,704 tons.

Buffalo and Erie, taken together, got 4,346,917 tons last year and 4,288,002 this year, showing a loss of 58,915 tons. This is attributed to the cold, late spring, which permitted little or no coal to be carried over, and to the Fuel Administration's policy to ship coal past the lake ports to the needy Northwest before the close of navigation. The deficiency will be made up later, and special emergency calls for coal, if authentic, will receive prompt consideration at Washington.

Heavy Fruit Traffic From California

The Southern Pacific announces that in the last 90 days the Pacific Fruit Express has carried 27,000 cars of fruit and other perishables out of California for the East. This sets an average for the three months of 300 cars a day, a volume of traffic of this character never equaled before. The extraordinary fruit movement is still going on. The Pacific Fruit Express has not only exhausted its own supply of cars (12,500 cars), but has hired at high premium between 8,000 and 9,000 foreign cars. New cars, delayed by government requisitions on foundries and car shops, are arriving now at the rate of 20 or 30 a day.

The grape crop is larger than last year, and is later. Two hundred cars a day are now ready to move, with 3,000 cars yet to be hauled. Moreover there are still carloads of onions and potatoes to move and 3,500 cars of oranges.

So great has been the traffic in military trains and government freight that the running time of fruit trains to Chicago has had to be lengthened from six days to eight days, a serious loss in the effective use of the cars.

Eastern Roads Want Increased Commodity Rates

At an informal conference with the Interstate Commerce Commission at Washington on Wednesday, the traffic executives of the lines in Official Classification territory submitted a proposed plan for asking the commission's permission to advance by approximately 15 per cent the commodity rates on which advances were not allowed by the commission in the 15 per cent case decision in June. The delegation of traffic executives was headed by George F. Randolph, commissioner for the lines in Official Classification territory, and George Stuart Patterson, counsel. Mr. Patterson said that the commission in its decision had objected to a horizontal percentage advance in commodity rates and had ordered the tariffs to be cancelled. New tariffs, including increases of approximately 15 per cent, but compiled to preserve existing relationships, had later been filed (prior to the time when the amendment requiring the approval of the commission before increased tariffs could be filed went into effect). The tariffs on grain and grain products, live stock and dressed meats, petroleum and products, and certain miscellaneous commodities have been suspended by the commission, and hearings have been set in some instances.

The carriers desired to ask the commission if it would not be practicable and desirable to withdraw the tariffs now under suspension and postpone the hearings and then file a blanket application for permission to file new tariffs covering all the commodities on which advances were not allowed in the original decision. Mr. Patterson added that it is the opinion of the eastern carriers that any relief which will be secured by permitting these commodity rates to go into effect will be temporary only, and that it is only a question of a short time when the needs of the carriers will be brought to the attention of the commission in a "much more general and specific way."

It was stated that the tariffs, together with a statement of the reasons such as would be required under the tentative fifteenth section order, could be prepared for submission in about 60 days.

A number of representatives of shippers and of state commissioners were present, but most of them took no part. Representatives of the live stock shippers wanted the proposed live stock increases considered in a separate hearing while the roads preferred that all the rates be considered in one proceeding.

Newman Erb, president of the Ann Arbor, and Commissioner McChord, asked whether the case could not be handled by a reopening of the original case, but this was considered impracticable because of the suspension proceedings already started.

It was arranged that Mr. Randolph should put the carriers' proposals in concrete form in a letter to the commission in a few days.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has issued an order relieving the carriers from the requirements of its orders of October 2, 1916, requiring carriers of Class 1 to file semi-monthly reports of freight car requirements and supply and quarterly reports of the condition of freight cars. This information is covered in the reports made by the railways to the commission on car service.

Applications from the railroads for permission to file certain tariffs naming increased rates under the amended fifteenth section of the commerce law will be considered by the commission at the informal hearing set for October 22 in their bearing on the questions to be then presented in respect of rates on petroleum and its products in Central Freight Association territory, as affected by the decision of the commission in the fifteen per cent case. The applications to be considered include the following commodities: Manufactured iron and steel, acid, aqua ammonia, coal tar, creosote, pine, rosin, turpentine, etc., chemicals, asphaltum, lye, and similar articles. The hearing is not for the purpose of receiving evidence, which will be heard at a subsequent hearing.

PERSONNEL OF COMMISSIONS

E. D. Chassell, member of the Board of Railroad Commissioners of Iowa, has resigned to become secretary-treasurer of the Farm Mortgage Bankers' Association of America, with headquarters in Chicago.

COURT NEWS

Additional Receiver for Missouri, Kansas & Texas Denied

Judge William C. Hook, presiding in the United States District Court for the Eastern Division of the Eastern District of Missouri, on Tuesday denied the petition of Speyer & Co., New York, for the appointment of an additional receiver for the Missouri, Kansas & Texas Railway, on the ground that the motion was based on criticisms of the management of the road which were not sustained.

"The grounds of the motion," said Judge Hook, "may be grouped under two heads.

"First—Criticisms of the management of the property by the present receiver. These, the court finds, have not been sustained by the proof and arguments presented. Second—That the attitude of the receiver towards the future of the property is too conservative; that he is not in accord with expert estimates of future earnings and costs and economies of operation, etc.; that he has wrongfully assumed the function of an expert adviser of those who have undertaken to formulate a plan of reorganization, and has impressed upon them his insufficient views of the earnings capacity of the railroad, with the result that a proposed plan, based on estimated lower earnings, makes the interest on the new securities to be issued for the junior securities mentioned, contingent instead of fixed or absolute. But it does not appear that in expressing his views the receiver has exceeded the limitations or proprieties of his position, or that he intended to impress them upon those engaged on the plan of reorganization. He appears to have done little more than to give his opinion when it was sought. Furthermore, counsel for those at work upon the plan of reorganization says its terms so far as formulated are not based on anything the receiver has said or on any estimate he has given. But aside from all this, most of the objections made relate to future conditions about which skilled and competent men may widely differ. They are generally too conjectural to afford a fair basis for personal condemnation. The motion should be denied.

"But lest the position of the Court upon the general subject discussed at the hearing be misconstrued, it should be said that so far as it can legally do so, it will favor a plan of reorganization based on a conservative estimate of the future and so soundly framed as to withstand the dangers of financial and commercial stress. It will not encourage a plan of reorganization having no

adequate provision for future capital requirements or one in which the refinancing is so close to probabilities that earnings are likely to be absorbed in a lean year or a succession of them by fixed charges. The last reorganization of this company is an example of insufficient provision for necessary new capital and it is one of the efficient causes of the present receivership. While a particular class of bond or note holders should not be denied the intrinsic value of their pledged security in its proper relation to the property as a whole, whether they should continue to have interest as a fixed and absolute charge or whether it should be contingent upon the proved prosperity of the railroad is a question of broad business policy in which they are not alone concerned. The very worth of the reorganization may be affected by it. Moreover, the public, though not a party to the record, has an interest in every railroad reorganization, accomplished by foreclosure, of which the court should take notice. The ability of a railroad fully and promptly to discharge its duties to the public, and that is of primary concern, depends in great measure upon the free margin between net income and fixed charges. In practice, when the margin becomes small, or disappears under adverse conditions that are rarely discounted sufficiently, the insistent demands of contract obligations are always met at the expense of those of a more general, less definite character."

Hours of Service Act—Telegraph Operators

A telegraph operator, whose regular period of service was from 3:30 p. m. to 12:30 a. m. each night, was directed to remain on duty to care for the United States mails, which were to be delivered to and received from a passenger train scheduled to pass the station at 10:15 p. m. The train on this particular evening was known to the railroad company's officers to be 2½ hours late at a somewhat distant station, and it had been losing instead of gaining time. There was another employee at the station, who was under no restriction as to hours of service, but he was not bonded, and the railroad company made no effort to have him care for the mails. The Circuit Court of Appeals, Eighth Circuit, on appeal from the district court for the Western District of Oklahoma, holds that notwithstanding the company's expectation that some of the lost time would be made up, and despite the fact that there was a considerable margin between the operator's hours and the scheduled time for the trains, the railroad company was guilty of violation of the Hours of Service Act in requiring its operator to remain on duty more than 9 hours, for, if it desired a bonded employee to handle the mail, it should have a sufficient supply of such help subject to call. *Atchison, T. & S. F. v. United States*, 243 Fed. 114. Decided April 9, 1917.

Exchange of Services Between Railroad and Telegraph Companies

In 1887 a railroad company and a telegraph company entered into an agreement for the exchange of "on line" business and "off line" business. At stated periods the amount of "off line" business done by each for the other was ascertained and balances discharged at rates fixed at one-half of the ordinary rates. This contract is still unattacked except as to "off line" business. This feature may be summarized as follows: The railroad company transports men and material for the telegraph company, without limit, so far as the maintenance of the telegraph system on the railroad company's property is concerned. The telegraph company in turn transmits messages along the railroad company's line, also without limit, so far as the maintenance and management of the railroad is concerned; and each company further serves the other with regard to that other's business in respect of business not directly connected with the line of railroad along which the telegraph lines extend. These two kinds of work are commonly known, the former as "on line" business, the latter as "off line" business. In an action by the railroad against the telegraph company, in which the real contest was between these two companies on the one side and the Interstate Commerce Commission on the other, the sole question was whether under the Interstate Commerce Act it was lawful for the two companies to observe such a contract [as regards off line business]. The law says that nothing shall be construed to prevent telephone, telegraph and cable companies from entering into contracts with common carriers for the exchange of services. The Circuit Court of Appeals, Second Circuit, holds that, in the absence of fraud, the right to exchange implies the right to fix the rate, method, or amount of exchange. The agreement being

to exchange the carriage of goods against transmission of intelligence, each party has the further right to fix the value of the services of each to the other; it makes no difference whether for convenience they ascertain that value by the usual money measurement or adopt some other course. If it were shown that this contract or any other agreement were being used as a cover for injuring one party or the public other rules would apply.—*B. & O. v. Western Union*, 242 Fed. 914. Decided May 8, 1917.

Transportation of Intoxicating Liquors

In 1915 a brewing company obtained a temporary injunction restraining the Rock Island from refusing to accept shipments of malt liquor to go into Iowa, intended for private consumption (215 Fed. 672. District Court, D. Minnesota). It was there held that the Webb-Kenyon law does not prevent the transportation of such liquor from one state to another where it is intended for the personal use of the consignee, though in violation of the law of his state which requires the consignee to have a permit. This decree has now been reversed by the Circuit Court of Appeals, Seventh Circuit, with directions to dismiss the bill. It is held that, though the Iowa statute prohibits merely the transportation or conveyance of intoxicating liquor, the receipt of the liquor from the carrier is a violation of the law, so as to bring the transportation of the liquor by an interstate carrier within the condemnation of the Webb-Kenyon Act, since, while the recipient of the liquor may not, as such, be a violator of the law, his receipt of the liquor from the carrier necessarily involves the violation of the law by the carrier.

The court in its opinion called attention to the Postal Department Appropriation Act of March 3, 1917, and to Resolution No. 57 of March 4, 1917. This act forbids the interstate transportation of intoxicating liquors into any State the laws of which prohibit the manufacture or sale therein of intoxicating liquors for beverage purposes.—*Hamm Brewing Co. v. Rock Island*, 243 Fed. 143. Decided April 10, 1917. Rehearing Denied, May 31, 1917.

The State of Washington sought to confiscate a carload of whisky found on a side track at Meadowdale station, on the Great Northern, as being there in violation of the state liquor law. The whisky had been delivered to the railroad at Butte, Mont., with instructions to ship it to a named consignee at Ketchikan, Alaska, via the Great Northern to Meadowdale, in care of a named motor truck company. A bill of lading was issued conforming to these instructions. There was no auto truck line running from Meadowdale to Ketchikan, nor any boat line. Practically all freight for Alaska carried by the Great Northern is unloaded in Seattle and forwarded thence by boat. There was no permit on the whisky as required for liquor brought into Washington. The road informed the consignor that it could not deliver such shipments to a motor truck company, but only to a water carrier, and directed the agent to hold the shipment. At this juncture the liquor was seized by the state sheriff. The railroad filed its claim for freight to Meadowdale and also averred that the shipment was interstate and not subject to the state laws. The lower court found the shipment was not in bona fide interstate commerce, but was intended for unlawful disposition in the state. The Supreme Court of the state holds that the shipment was interstate. It was the railroad's duty to receive the whisky at Butte, unless it knew that it was intended to be diverted for delivery within the state of Washington, where it would be contraband if not protected by permit. Regardless of the state statute casting the burden upon the person claiming the article seized, the burden was held to be on the state to prove that the shipment was in fact not interstate, in view of section 24 of the act, providing that the prohibitory provisions "shall not apply to shipments transported by any common carrier of unbroken packages of intoxicating liquor in continuous transit through this state from a point outside of the state to another point outside of the state." The railroad was held not bound to deliver the liquor to an irresponsible auto delivery company within the state, but had the right to cause a deviation from the designated route. There must be something more than mere suspicion to justify the seizure and confiscation of liquors while in possession of a common carrier as an interstate shipment. The evidence was held insufficient to support a finding that the railroad was violating the state law, and judgment for the state was reversed.—*State v. Great Northern* (Wash.), 167 Pac. 103. Decided August 29, 1917.

Equipment and Supplies

LOCOMOTIVES

THE FRENCH GOVERNMENT is reported as having placed orders through the United States Government for 640 locomotives.

THE ILLINOIS CENTRAL, noted in last week's issue as about to issue inquiries for 85 locomotives, will ask prices on 50 Mikado, 21 switching and 4 hump-yard locomotives.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, wants a second-hand six-wheel switching or Mogul type locomotive with 18 x 24 in. cylinders, a weight of 112,000 lb., with a tractive effort of 24,000 lb., and steam pressure of 165 lb.

FREIGHT CARS

SPENCER KELLOGG & SONS, Buffalo, N. Y., are enquiring for 10 8,000-gal. tank cars.

THE UNION PACIFIC is reported as contemplating the purchase of 5,000 freight cars.

THE BALTIMORE & OHIO will purchase material for 100 caboose cars which it will build in its own shops.

THE AMERICAN STEEL & WIRE COMPANY has ordered a scale test car from the American Car & Foundry Company.

THE FRENCH GOVERNMENT is reported as having placed orders through the United States Government for 9,000 cars with a number of car builders.

THE CENTRAL OF GEORGIA will build about 200 freight cars in its own shops, these being a part of the order mentioned as contemplated in last week's issue.

THE ILLINOIS CENTRAL, reported in last week's issue as about to issue inquiries for 3,500 freight cars, now expects to build from 700 to 1,000 of these cars in its own shops.

THE RUSSIAN GOVERNMENT which was expected to have placed an order last week for 10,000 four-wheel cars has now issued another inquiry for 1,000 eight-wheel cars and may buy as many as 30,000 cars in all.

THE NEW JERSEY LINE COMPANY.—Through a typographical error a company by this name was reported in last week's issue as inquiring for 50 gondola cars. This name should have been given as the New Jersey Zinc Company.

THE NATIONAL TUBE COMPANY has issued inquiries for 10 100-ton skelp cars, 50 70-ton hopper, 50 70-ton coke, 245 70-ton gondola, 15 70-ton flat and 30 50-ton steel dump-car bodies for the Lake Terminal Railroad; 30 70-ton hopper, 4 70-ton gondola and 12 70-ton flat cars for the McKeesport connecting, and 40 70-ton hopper and 14 70-ton gondola cars for the Benwood & Wheeling. This inquiry is similar to the one issued last April, on which, however, no orders were placed at that time.

PASSENGER CARS

THE CENTRAL OF GEORGIA, reported in last week's issue as about to issue an inquiry for passenger cars, has ordered 16 such cars from the Pullman Company.

IRON AND STEEL

THE PENNSYLVANIA RAILROAD has ordered 1,000 tons of bridge steel from the American Bridge Company.

COMMERCE OF ALASKA WITH THE UNITED STATES.—The movement of merchandise between Alaska and the United States reached its highest record in the fiscal year ended June 30, 1917, aggregating practically \$100,000,000 in round numbers. The exact figures are \$99,765,908 in 1917, exceeding the trade in 1916, the previous high year, by 23¼ million dollars, and more than double the trade in 1915, which amounted to \$48,702,387.

Supply Trade News

C. W. Cross has been appointed district manager of the Oxweld Railroad Service Company with office at 233 Railway Exchange, Chicago.

H. F. Bardwell has been appointed New York district manager for the Vanadium-Alloys Steel Company of Pittsburgh and Latrobe, Pa., with offices at 30 Church street, New York.

A. G. Shaver has been retained as consulting engineer by the A. G. A. Railway Light & Signal Company, Elizabeth, N. J. Mr. Shaver's headquarters will be room 857, Peoples Gas Building, Chicago.

Edmund Barany, machine designer of the Singer Manufacturing Company, Elizabeth, N. J., has assumed the duties of mechanical engineer and assistant to general superintendent of the Cleveland Twist Drill Company.

Signal Companies' Publicity Bureau

The four principal signal manufacturing companies—the Union Switch & Signal Company, the General Railway Signal Company, the Federal Signal Company and the Hall Switch & Signal Company—have joined in establishing a single publicity bureau, with headquarters at 120 Broadway, New York; and Henry M. Sperry, for the last three years with the General Railway Signal Company as manager of its department of publicity has been appointed publicity representative of the four companies.

Henry Muhlenberg Sperry was born in Baltimore, Md., and educated in Philadelphia. He entered railway service in August, 1881 on the Pennsylvania Railroad in the engineer corps of the New York division. In 1887 he was appointed supervisor of signals of this division and had charge of the construction of a large number of interlocking plants required by changing the line from Philadelphia to New York from a two-track to a four-track road. In December, 1891, he left the road and went to the Johnson Railroad Signal Company as general agent, in which position he had general charge of block signal construction on the Hudson division of the New York Central. In June, 1894, he was appointed signal engineer and agent for the National Switch & Signal Company in charge of the western district. Here he designed and installed the large interlocking plant at State Line, Ind., and the signaling of the Chicago Elevated railroads, including the Union Loop. In January, 1899, he was appointed signal engineer and agent for The Union Switch & Signal Company, at New York. While in this position he prepared plans and made a report on the reconstruction of the St. Paul Union Depot, St. Paul, Minn., to provide track facilities for ten roads; he also prepared the preliminary plans and method of signaling for the first New York subway (the Interborough Rapid Transit Company). In February, 1905, he was appointed consulting signal engineer for the Hudson Companies, New York, and prepared plans and reports covering the four tunnels under the Hudson River and the large terminal station at Church street, New York, designed to handle 60,000 passengers an hour. In February, 1906, he was appointed resident manager for the General Railway Signal Company, at New York, and on January 1, 1910, was appointed sales manager at Rochester. From November 1, 1914, he has been manager of the department of publicity



H. M. Sperry

and education of that company, but for the past nine months has been engaged in the preliminaries connected with his present position as publicity representative of the four companies.

Mr. Sperry has also been a director of the National Railway Appliances Association since 1911, and in March, 1916, was elected its president. He is a member of the American Society of Civil Engineers, the American Railway Engineer Association, and the Railway Signal Association.

Emil Tyden, inventor of the Tyden car seal and vice-president of the International Seal & Lock Company, Chicago, has been commissioned a major in the army and assigned to the ordnance section, located at Washington, D. C.

L. F. Wilson, vice-president of the Bird-Archer Company, Chicago, has been called into active service with the Second division of the regular army at Chicamauga Park, Ga., with the rank of major in the quartermaster corps.

Berry Brothers, varnish manufacturers, Detroit, Mich., have prepared an illustrated folder containing instructions on how to recognize military insignia, together with a full page half-tone display of the various marks of rank and distinction in the army and navy.

The Ward Leonard Electric Company, Mount Vernon, N. Y., manufacturers of electric-controlling devices and vitreous enamel insulation resistance units, announces that it is now represented in Cleveland, Ohio, by the Walter P. Ambros Company, with offices in the Arcade.

At a meeting of the directors of the Lima Locomotive Works, Inc., October 17, a semi-annual dividend of 3½ per cent was declared on the preferred stock, payable October 31 to stockholders of record October 24. The number of directors was increased from seven to eleven.

The Taylor Wharton Iron & Steel Company, Easton, Pa., celebrated the 175th anniversary of its organization at High Bridge, N. J., on Saturday, October 13. The program of the day included an inspection of the plant, a historical pageant, a clam bake and a concert during the day and evening.

H. E. Gifford, Jr., has been appointed northwestern representative of the A. G. A. Railway Light & Signal Company, Elizabeth, N. J. Mr. Gifford has been connected with the signal business for about 12 years, in which time he has gained a varied experience both in railway and supply work. His headquarters will be room 857, Peoples Gas Building, Chicago.

John J. Harty, vice-president and general manager of the Canadian Locomotive Company, Kingston, Ont., has been elected president of the company. He is also a director of the Dominion Foundries & Steel Company and is a son of William Harty, who was, some years ago, president of the Canadian Locomotive Company and is still one of its largest stockholders.

Frank B. Archibald, for the past five years eastern manager of the National Lock Washer Company, has been elected vice-president; J. Howard Horn, eastern representative for the past seven years, has been appointed sales manager. On or about December 1, offices will be opened in Philadelphia, Pa., and St. Louis, Mo., these in addition to present offices in Chicago and Detroit, Mich.

Westinghouse Electric & Mfg. Company Announces Wage Increase

Another increase in wages for shop employees aggregating nearly \$2,000,000 a year has just been announced by the Westinghouse Electric & Manufacturing Company. Effective October 16, all employees observing shop hours, except munition workers, will receive an additional bonus of 10 per cent if they are on a salary or time-rate basis, and of 7 per cent if they are on a piece, premium or task basis.

TRADE PUBLICATIONS

TRADING WITH THE ENEMY ACT.—The American Steel Export Company has issued a new 24-page pamphlet giving the groups of countries and lists of materials affected by the President's proclamation and subsequent orders, together with facsimiles of forms prescribed and an explanation of their use.

Railway Construction

CHICAGO SHORT LINE.—This company has begun the construction of a one-story engine and car repair shop with basement at South Chicago, Ill. The building will be a brick structure, 120 ft. by 150 ft., and will cost about \$30,000. Freyn & Co., Chicago, have the contract.

EASTERN TRACTION.—This company is being organized to build an interurban electric line from Houston, Texas, east via Beaumont to Orange, thence south towards Lake Charles, La. The project is being promoted by Ed. Kennedy of Houston and associates. Financial support in the way of bonuses, also donations of right of way and sites for terminals are being given by the towns along the route.

GREAT NORTHERN.—This company has let a contract for grading and double-tracking between Cut Bank, Mont., and Blackfoot, 26 miles, to Porter Brothers, Spokane, Wash. The work will cost approximately \$100,000 and involves no bridge work.

The Great Northern recently commenced the construction of a freight warehouse, 60 ft. by 800 ft., on Pine street, between Eighth street and Van Slyke court, St. Paul, Minn. The building will be of brick and concrete construction, two stories high with a basement for half the length, and one story with no basement for the remainder of the length. The completed structure will cost approximately \$100,000. W. L. Johnson, St. Paul, has the contract.

GULF, COLORADO & SANTA FE.—This company will construct a reservoir at Valera, Tex., with a capacity of about 360,000,000 gal., which will require a pipe line 10½ miles long. The dam will be of earth with a core wall through the center and a concrete spillway.

HOCKING VALLEY.—This company has authorized the construction of second track between Delaware, Ohio, and Marion, 21 miles; Crawford and Cary, 2 miles, and Le Moyne and Cummings, 4 miles, at an estimated cost of about \$1,300,000. The work will include some realignment and grade reduction, including the elimination of 3 highway grade crossings and some concrete arches. The grading will amount to about 20,000 cu. yd. per mile. A considerable portion of the work will be done by force account. No contracts have been let to date.

ILLINOIS CENTRAL.—This company has purchased land on the east side of its right of way between One Hundred and Fifty-seventh and One Hundred and Seventy-fifth streets, Chicago, and will use it for a freight yard. The total estimated expenditure for improvements, including grading, buildings and equipment, is \$1,250,000.

NEW YORK, NEW HAVEN & HARTFORD.—This company has given a contract to the Thompson-Starrett Company, New York, for building a new station at New Haven. The work is to be carried out on a cost plus percentage basis.

NORTHERN PACIFIC.—This company has started laying track on its Lake Basin branch, extending 38 miles northwest from Hesper, Mont., a station on the Great Northern about five miles north of the junction of the Great Northern and the Northern Pacific near Laurel, Mont. About 90 per cent of the grading on the line has been completed, bridges are all completed and the road expects to complete track-laying late in the fall.

PHILADELPHIA & READING.—Work has just been started on the construction of a one story addition to freight house No. 4 at the corner of Noble and New Market streets, Philadelphia, Pa. The extension will be 83 ft. wide by 129 ft. long and 20 ft. high. The structure is to have steel columns, and girders, with brick walls and timber roof, covered with slag roofing. The contractor is A. L. Carhart, Philadelphia.

SOUTHERN PACIFIC, TEXAS LINES.—The Galveston, Harrisburg & San Antonio is building a branch from Rosenberg, Tex., through Needville to Damon Mound, 21 miles. M. M. Cravens, Rosenberg, Tex., has the contract for the grading, 25 per cent of which has been completed. The work involves the handling of about 15,000 cu. yd. per mile. The line will have a maximum curvature of two degrees.

Railway Financial News

BOSTON & MAINE.—At the annual meeting of the stockholders it was voted to hold the annual meeting in future on the second Wednesday in April and to change the annual report to cover the calendar year ended December 31. The fourteen directors were re-elected.

See also New York, New Haven & Hartford.

CANADIAN NORTHERN.—The agreement based on the legislation of last session whereby the government acquires the capital stock of this company will be executed shortly. The final conference between representatives of the government and of the railway will take place this week. By the terms of the legislation, when the stock is taken over it will be at a price to be fixed by arbitration. When the stock of the company passes into the hands of the government a board of directors headed by Hon. Frank Cochrane, late Minister of Railways, will be appointed to manage the Canadian Northern system. There are already three government directors on the board and they are expected to remain for the present. The arbitration board which is to determine the value of the common stock will be presided over by Sir William Meredith, while it is understood that the stockholders' arbitrator will be the Hon. F. H. Phippen, counsel of the Canadian Northern. If they fail to agree on a third arbitrator, the senior judge of the Exchequer Court will name him.

CHICAGO, ROCK ISLAND & PACIFIC.—At the annual meeting of stockholders, held at Chicago on October 11, the Amster faction succeeded in electing four directors and the opposition nine directors. The Amster directors are as follows: Nathan L. Amster, Henry Bruere, P. G. Ten Eyck, Prof. William Z. Ripley. The remaining directors are: James E. Gorman, John G. Shedd, James A. Patten, B. G. Dawes, James N. Wallace, James Speyer, Charles H. Hayden and Frederick W. Scott; and A. C. Rearick has been chosen in place of Nathaniel French, who resigned after the meeting. The articles of consolidation were amended, taking from the directors the power to amend the by-laws in any way. Hereafter the by-laws can be changed only by the stockholders.

DENVER & RIO GRANDE.—At the annual meeting directors were elected as outlined in the program announced by the Platten stockholders' committee. The election gives the Missouri Pacific faction, so called, the majority representation on the board. The Gould directors who retired were Kingdon Gould and B. B. McAlpin. The directors elected were B. F. Bush, Edward L. Brown, Harry Bronner, Arthur Coppell, George J. Gould, J. Horace Harding, George C. Haven, E. T. Jeffery, John W. Platten, Finley J. Shepard and Harrison Williams.

NEW YORK, NEW HAVEN & HARTFORD.—Judge Julius M. Mayer, in the United States District Court, has issued an order extending until February 1, 1919, the time for the sale of this company's holdings of the preferred and common stock of the Boston & Maine. Under the dissolution decree of October 17, 1914, the securities were to be disposed of by January 1, 1918.

WESTERN MARYLAND.—Stockholders at the annual meeting of the company in Baltimore authorized the issue of \$5,000,000 7 per cent three-year notes, to be dated November 1, 1917, secured by the pledge of \$6,500,000 of the road's first and refunding mortgage bonds. The creation of an authorized general refunding mortgage of \$150,000,000 was voted to provide for refunding the company's obligations and for improvement purposes.

George J. Gould retired from the board of directors and was succeeded by John N. Willys. The other directors elected were: Edward D. Adams, Maxwell C. Byers, Henry E. Cooper, Bertram Cutler, Frederick T. Gates, Carl R. Gray, Lawrence Greer, Alvin W. Krech, Edgar L. Marston, Emery H. Smith and W. A. Wilbur.

ANNUAL REPORT

SOUTHERN RAILWAY COMPANY—TWENTY-THIRD ANNUAL REPORT

RICHMOND, VA., October 9, 1917.

To the Stockholders of Southern Railway Company:

The Board of Directors submits the following report of the affairs of the Company for the year ended June 30, 1917:

It has been a record year. The volume of revenue, of expenses and of income, as well as the extent of improvements and betterments carried through, all reached new high levels, reflecting the good and the evil of the prosperity which has come to the South. Expanding business has brought in large returns, but it has set higher than ever before, and perhaps higher than is economically warranted, the standards of expenses. Nevertheless, until business shall again contract it would seem that the South may be expected still to prosper.

The story in detail of the Southern Railway's busy year will be found in the statements of account and statistical analyses exhibited with this report. It may suffice here to submit a rapid summary.

Total revenues were \$81,388,324.97, an increase of 14.46 per cent. over the previous year. Of this there remained, after paying out 70.10 per cent. for the expenses of operation and taxes, a net operating income of \$24,331,453.30. This is equivalent to 5.97 per cent. earned upon the property investment of the Company, which is now \$407,688,151.71.

The final balance of corporate income over charges was \$12,360,161.11, a sum which exceeded by \$3,026,262.50 the like balance of last year and the previous record.

This income balance has enabled the Company to spend during the year \$10,418,687.60 for additions and betterments to and upon the property over and above the proceeds of the Atlanta & Charlotte Air Line bonds which are being applied on double-track construction.

OPERATING CONDITIONS.

The study and practice of efficiency of operation were continued, and are reflected in the fact that the average trainload and the average carload were increased; that there was a substantial decrease in the charges for loss and damage of freight; that the balance of hire of equipment is for the first time in four years on the right side of the account, and, most of all, that more than seventeen million passengers were carried without loss of a passenger's life in a train accident. Operating unit costs were, however, distorted, as compared with last year, by the large increases in wages which took effect during the year, and by an unprecedented increase in the cost of fuel.

The property has been well maintained; its physical condition was never better than at the close of the year. The roadway destroyed by storms and floods in July, 1916, was restored and the entire cost of reconstruction was charged to maintenance expenses for the year.

At the close of the year the percentages of equipment in bad order and awaiting repair were: freight cars 2.32 per cent., locomotives 8.40 per cent.—figures which tell their own story of preparedness.

General Expenses increased with other expenses largely by reason of increases in pay to clerks and attendants and of the continuing increase in the contribution to Federal valuation. On the other hand the charges for salaries and expenses of general officers show a decrease.

Taxes again show a large increase, equivalent to 16.39 per cent. above last year. Tax accruals for the year include, as nearly as it has been practicable to determine, provision for the additional tax anticipated under the war revenue tax law. It is interesting, however, to note that the requirement of taxes upon the dollar of revenue has now remained constant for three years under great variations of traffic returns, being 4.17 cents in 1915, 1916 and 1917.

TRAFFIC CONDITIONS.

Freight traffic increased 3,291,636 tons, or 10.47 per cent., tons one mile increasing 14.57 per cent. Number of passengers increased 901,187, or 5.37 per cent., passengers one mile increasing 14.05 per cent.

Revenue increases were:
From Freight\$6,672,407.39 or 13.85 per cent.
Passengers2,511,048.39 or 15.17 per cent.

The results from passenger operations are remarkable, because, when compared with the previous year of maximum passenger earnings, there was a substantial reduction in passenger-train miles, due in part to the elimination of excursions and of circus trains in anticipation of the war transportation demands of the government, viz.:

	Earnings from Passengers.	Passenger-Train Miles.
1913-1914.....	\$19,004,782.70	18,362,757
1916-1917.....	19,061,963.83	16,174,780

Except as affected by varying crop, local and temporary conditions, which caused this year a loss of certain traffic, principally perishables, there was a substantial, steady and uniform increase of every class of traffic handled by the Company, as may be seen from the table of classified tonnage. The tonnage of merchandise continues to be substantially that of bituminous coal, each in round figures ten million tons, or 30 per cent. of the whole tonnage carried. This equivalence has been characteristic for many years and is one of the most interesting of the phenomena of Southern Railway traffic. Owing to decreased cotton production within the States directly served by the Company the tonnage of cotton seed and its products decreased 101,184 tons, or 13.5 per cent. Increased Southern mill consumption occasioned movement from other territory of cotton more than sufficient to offset the loss in tonnage of that commodity originating in our own territory, and to give, in fact, an increase of 72,097 tons, or 11.08 per cent.

Through the location of numerous military camps within the South, we have engaged, and for some time may be expected to continue to engage, increasingly, in the transportation of supplies for account of the government. Independent of this, the business conditions in the South warrant the expectation of a healthy growth of traffic for the ensuing year.

INDUSTRIAL AND AGRICULTURAL DEVELOPMENT OF THE TERRITORY SERVED.

MANUFACTURING:

The year has been one of steady growth of Southern manufacturing. New plants completed during the year in the territory served by the Southern Railway System and associated lines were as follows:

Character.	Number.
Brick, Tile, etc.....	32
Canneries.....	23
Cheese Factory.....	1
Chemical.....	12

Character.	Number.
Cotton Seed Products, Ginneries, etc.....	20
Creameries.....	8
Fertilizer.....	7
Flour and Feed.....	44
Furniture.....	15
Iron Products.....	21
Lumber.....	145
Power Developments.....	12
Stone, Coal, Mineral, etc.....	97
Tannery.....	1
Textile, Clothing, etc.....	90
Woodworking.....	33
Miscellaneous.....	226
Total.....	787

The total capital invested in these new industries amounted to \$44,585,280. During the year there were additions made to 348 previously existing manufacturing establishments at a reported cost of \$17,111,370. Plants reported under construction on June 30, 1917, were 89 in number with a capital of \$18,396,500. General improvements consisting of new buildings of all kinds (except those used in manufacturing), public utilities, etc., cost \$70,362,335.

The importance of the cotton manufacturing industry of the South on the lines of the Southern Railway System continues to grow. The report of the United States Census Bureau for the cotton statistical year ended July 31, 1917, shows that, during the year, the consumption of cotton in the mills in cotton producing States increased nearly eleven per cent., as compared with an increase of barely one per cent. in the mills of all other States. The consumption in Southern mills amounted to 3,901,413 bales, exceeding the 2,899,775 bales consumed in other States by 1,001,638 bales. The growth of cotton manufacturing in the territory served by the Southern Railway System may be said to date from 1880, in which year the consumption of cotton in the mills of cotton producing States was only 188,748 bales, and in all other States 1,381,596 bales. Since that year the increase in consumption in Southern mills has amounted to 1,967 per cent., as compared with 110 per cent. in all other States.

AGRICULTURE:

The current year is one of great prosperity for Southern farmers. With the exception of oats, which were damaged by the unusually severe frosts in the spring, yields of all crops compare most favorably with those of 1916. The September first estimates of the United States Department of Agriculture show the following comparisons for the Southern States served by the Southern Railway System:

	1917.	Increase over 1916.	Per Cent.
Cotton, bales.....	6,357,000	1,030,635	19.35
Corn, bushels.....	676,342,000	181,106,000	36.57
Wheat, bushels.....	48,686,000	676,000*	1.37
Oats, bushels.....	49,507,000	19,595,000*	28.36
Tobacco, pounds.....	915,576,000	68,117,000	8.04
Irish Potatoes, bushels.....	38,811,000	6,923,000	21.71
Sweet Potatoes, bushels.....	62,770,000	16,491,000	35.63
Apples, bushels.....	35,025,000	804,000*	2.24
Peaches, bushels.....	13,387,000	3,611,000	36.94

* Decreases.

In addition to the above crops, there have been large increases in the yields of certain crops for which statistics are not gathered by the Agricultural Department. Velvet beans are rapidly coming into prominence as a most valuable stock feed and are becoming an important agricultural asset of the South. According to a conservative estimate, 5,000,000 acres of velvet beans have been grown in the States served by the Southern Railway System this year, being an increase of at least 300 per cent. over last year. There have also been large increases in the production of soy beans and peanuts.

In live stock husbandry the South has made a new declaration of economic independence. The increased production of grain and forage crops in the South is putting the live stock industry of the territory served on a sound basis and it is rapidly developing. The importance of this fact will be apparent to any one who has studied the statistics of the imports of food, and especially of meats, into the South in the past. Our reports show the location of 8,050 pure-bred breeding cattle and 5,929 pure-bred breeding hogs on farms along our lines during the year. These figures do not represent the total number, but only those that have come to the knowledge of our agricultural agents. The number of hogs would be greatly increased if figures were available covering the work of the boys' pig clubs in all of the territory. That it is not necessary for Southern farmers to go to other sections for high class pure-bred animals to the same extent as formerly is shown by the frequency with which the names of Southern breeders are found in the lists of prize winners at the leading live stock exhibitions of the North and West as well as of the South. In co-operation with the Division of Animal Husbandry in the United States Department of Agriculture we are now encouraging a movement of cattle from localities in Texas, where a shortage of food is reported, to farms on our lines. While this movement includes some feeders, most of the animals are high-grade Hereford and Shorthorn cows and heifers which will be used for breeding.

Our reports show that there were planted during the year about 3,500,000 apple, peach, Satsuma orange and other fruit trees in the territory served by the Southern Railway System and associated lines.

We have continued our co-operative work in aid of the agricultural development of the territory during the year. Special attention again has been given to aiding farmers to find profitable markets for their products. Letters received from many of those who avail themselves of our service show that it is most helpful and is highly appreciated. One of its results is to encourage farmers to produce in larger quantities products which they have been able to market successfully, thus increasing the volume of our traffic.

IMMIGRATION:

The relatively low prices of farm lands, in proportion to their productive value, in many parts of the South, and the climatic advantages of the territory, offer strong inducements for the migration of farmers from more densely populated and less favored parts of the country. The movement of Northern and Western farmers to the South is constantly going on and we hope to make our solicitation of farm settlers even more efficient in the future than it has been in the past. The location of military training camps and cantonments in the South is bringing into our territory many thousands of young men who have ever been South before. They will learn much of the resources and opportunities of the territory in which they are

being trained and erroneous ideas about the South that they may have will be corrected. As a means of aiding in their education and creating a desire to establish in the South after the war, we are distributing literature in the camps giving facts about the South and its agricultural and industrial opportunities.

THE ADDITIONS TO CAPITAL ACCOUNT AND TO PROPERTY INVESTMENT.

PROPERTY INVESTMENT:

The investment in road and equipment increased \$12,781,279.71, representing additions made during the year, exclusive of expenditures, amounting to \$8,410,921.70, for double-track on the Atlanta & Charlotte Air Line Railway. This investment represents additions provided to take care of an expanding traffic and betterments for greater efficiency and economy of operation. The success of the Company in handling during the past year a record traffic easily and without congestion, so building its income balance, may fairly be attributed to the liberal policy of enlarging the plant which has been followed during the past few years.

DOUBLE TRACK:

Of the 649 miles of main line between Washington, D. C., and Atlanta, Ga., 521 miles are now double-track on improved alignment and grades, and the work is progressing on the remaining 128 miles. The incomplete work is south of Charlotte, N. C., and additional funds for carrying it on were made available through the sale during the past year of the remaining \$4,000,000 thirty-year five per cent. bonds of The Atlanta & Charlotte Air Line Railway Company provided for issue under the First Mortgage of that Company.

Southern Railway Company now operates a total of 820 miles of double-track railroad.

NEW ORLEANS AND NORTHEASTERN RAILROAD:

Southern Railway Company has acquired substantially all of the capital stock of New Orleans and Northeastern Railroad Company, which owns the railroad extending from New Orleans, La., to Meridian, Miss., there connecting with other lines of Southern Railway System. This stock was held for many years by an English investment company known as the Alabama, New Orleans, Texas and Pacific Junction Railways Company, Limited, and its purchase was made possible through the wish of the Directors and other security holders of the English company to assist the British Government in securing American exchange. The English company owned also the controlling stocks of the Alabama and Vicksburg Railway Company and the Vicksburg, Shreveport and Pacific Railway Company, representing the railroad extending from Meridian westerly to Shreveport, La., and as Southern Railway Company, as a part of the transaction, disposed of its minority holding of the shares of the English company acquired in 1905, it has parted with all interest in the Alabama and Vicksburg and the Vicksburg, Shreveport and Pacific. The acquisition of the New Orleans and Northeastern Railroad stock secures to Southern Railway Company a direct entrance into New Orleans as well as physical connection with its extensive terminals at that port.

BONDS AND NOTES:

There was no increase in mortgage bonds outstanding. Equipment trust obligations increased \$2,059,000.

There were drawn and taken into the treasury, \$10,675,000 Development and General Mortgage four per cent. bonds. Of these bonds \$10,000,000 were drawn, under the terms of the mortgage, for additions and betterments, and the remaining \$675,000 were drawn for the proportion charged to capital of certain equipment trust obligations paid during the year. The total amount of Development and General Mortgage four per cent. bonds available for disposition on June 30, 1917, was \$49,149,000, of which \$44,250,000 are pledged as collateral for notes.

A comprehensive plan for financing existing and future requirements of capital, including the funding of short term notes, through the creation of a new mortgage to be called the Refunding and Improvement Mortgage, was recommended by the Board of Directors and authorized by the stockholders at the meeting held on January 5, 1917, but has not been consummated because extraordinary conditions existing in the investment market prevented the sale of long term bonds on terms sufficiently advantageous to the Company to justify selling them. This made it necessary again to resort to short term notes, and there were issued and sold \$25,000,000 two-year five per cent. notes dated March 2, 1917, payable March 2, 1919, to provide for maturing notes, to discharge the obligation incurred in the purchase of the New Orleans and Northeastern Railroad stock and to furnish a small amount of additional capital for improvements.

DIVIDEND.

A dividend of 2½ per cent. on the Preferred Stock has been declared payable on November 20, 1917, to stockholders of record at the close of business on October 31, 1917. In view of the income account the Board concluded that this dividend might conservatively be paid, in justice to the expectations of the preferred stockholders, notwithstanding the fact that there still remains unsolved the problem of permanent financing of existing and future capital requirements.

SERVICE OF EMPLOYEES.

Despite disturbed labor conditions throughout the year and acute discussions of wages, the Company has again had loyal and efficient service from its army of officers and employees. The management cordially acknowledges that whatever success has been secured is due to that co-operation and to the vigor with which work is done under the stimulus of the now established and recognized pride of the rank and file in their relation to the property.

ACCOUNTS.

The accounts have been examined, as usual, by independent auditors and accountants, Messrs. Patterson, Teele & Dennis, and their certificate is made a part of this report.

Respectfully submitted, by order of the board,

FAIRFAX HARRISON,
President.

TABLE 1.—INCOME STATEMENT FOR YEAR ENDED JUNE 30, 1917, COMPARED WITH YEAR ENDED JUNE 30, 1916.

	YEAR ENDED JUNE 30,		INCREASE OR DECREASE.
	1917.	1916.	
OPERATING REVENUES:			
Freight	\$54,863,693.57	\$47,020,481.81	\$7,843,211.76
Passenger	19,061,963.83	16,615,857.10	2,446,106.73
Miscellaneous Passenger-Train	556,941.92	368,411.29	188,530.63
Mail	1,740,566.13	1,458,879.37	281,686.76
Express	2,348,657.61	2,037,282.86	311,374.75

	YEAR ENDED JUNE 30,		INCREASE OR DECREASE.
	1917.	1916.	
OPERATING REVENUES:			
Other Transportation	1,183,282.05	1,085,998.62	97,283.43
Incidental	1,281,941.26	1,055,146.52	226,794.74
Joint Facility	351,278.60	355,617.67	-4,339.07
TOTAL OPERATING REVENUES	\$81,388,324.97	\$69,997,675.24	\$11,390,649.73
OPERATING EXPENSES:			
Maintenance of Way and Structures	\$10,138,386.37	\$8,175,411.13	\$1,962,975.24
Maintenance of Equipment	12,372,057.35	11,183,701.34	1,188,356.01
Traffic	2,039,638.29	1,904,129.24	135,509.05
Transportation	26,748,927.79	22,751,698.00	3,997,229.79
Miscellaneous Operations	539,378.11	404,167.81	135,210.30
General	2,199,448.65	2,038,702.18	160,746.47
Transportation for Investment—Credit	107,700.40	416,693.58	8,993.18
TOTAL OPERATING EXPENSES	\$53,630,136.16	\$46,041,116.12	\$7,589,020.04
NET REVENUE FROM OPERATIONS	\$27,758,188.81	\$23,956,559.12	\$3,801,629.69
TAXES	3,394,424.14	2,916,426.65	477,997.49
UNCOLLECTIBLE REVENUES	32,311.37	36,127.38	-3,816.01
TOTAL OPERATING INCOME	\$24,331,453.30	\$21,004,005.09	\$3,327,448.21
NON-OPERATING INCOME:			
Hire of Equipment—Credit Balance	\$65,199.28	.....	\$65,199.28
Joint Facility Rent Income	294,954.29	\$290,695.07	4,259.22
Income from Lease of Road	18,897.78	67,338.24	-48,440.46
Miscellaneous Rent Income	138,295.72	136,225.82	2,069.90
Net Income from Rail Leased	36,343.65	24,077.44	12,266.21
Dividend Income	1,220,890.33	1,271,256.09	-50,365.76
Income from Funded Securities	950,381.90	1,106,342.69	-155,960.79
Income from Unfunded Securities and Accounts	364,308.55	479,746.72	-115,438.17
Miscellaneous Income	32,023.37	46,344.02	-14,320.65
TOTAL NON-OPERATING INCOME	\$3,121,294.87	\$3,422,026.09	-\$300,731.22
TOTAL GROSS INCOME	\$27,452,748.17	\$24,426,031.18	\$3,026,716.99
DEDUCTIONS FROM TOTAL GROSS INCOME:			
Hire of Equipment—Debit Balance .....	.....	\$679,354.69	-\$679,354.69
Joint Facility Rents	\$1,056,833.97	1,054,240.57	2,593.40
Rent for Leased Roads	1,939,066.63	1,778,527.90	160,538.73
Miscellaneous Rents	50,179.48	40,663.98	9,515.50
Separately Operated Properties	464,695.83	189,317.85	275,377.98
Interest on Unfunded Debt	70,033.26	623.59	69,409.67
Miscellaneous Income Charges	128,562.87	143,175.16	-14,612.29
TOTAL DEDUCTIONS OF THIS CLASS	\$3,709,372.04	\$3,885,903.74	-\$176,531.70
TOTAL AVAILABLE INCOME	\$23,743,376.13	\$20,540,127.44	\$3,203,248.69
INTEREST ACCRUED ON FUNDED DEBT (Table 5)	\$10,496,292.24	\$10,329,591.67	\$166,700.57
INTEREST ACCRUED ON EQUIPMENT OBLIGATIONS (Table 6)	660,914.78	650,629.16	10,285.62
DIVIDENDS ACCRUED ON SOUTHERN RAILWAY—MOBILE AND OHIO STOCK TRUST CERTIFICATES	226,008.00	226,008.00	.....
TOTAL DEDUCTIONS OF THIS CLASS	\$11,383,215.02	\$11,206,228.83	\$176,986.19
BALANCE OF INCOME OVER CHARGES	\$12,360,161.11	\$9,333,898.61	\$3,026,262.50
RESERVE FOR 2½% DIVIDEND ON PREFERRED STOCK, PAYABLE NOVEMBER 20, 1917	1,500,000.00	.....	1,500,000.00
APPROPRIATION OF INCOME FOR ADDITIONS AND BETTERMENTS	181,401.72	88,195.03	93,206.69
BALANCE CARRIED TO CREDIT OF PROFIT AND LOSS	\$10,678,759.39	\$9,245,703.58	\$1,433,055.81
TABLE 2.—PROFIT AND LOSS YEAR ENDED JUNE 30, 1917.			
Credit Balance June 30, 1916			\$28,248,594.78
Add:			
Credit Balance of Income for the Year			10,678,759.39
Net Miscellaneous Credits			5,291.23
			\$38,932,645.40
Deduct:			
Discount on Securities charged off during the year			\$845,461.36
Net difference between book value and selling price of securities sold			610,958.24
Property Abandoned and not Replaced			58,941.75
Advances to Proprietary Companies written off			352,034.84
			1,867,396.19
Credit Balance June 30, 1917			\$37,065,249.21

TABLE 3.—GENERAL BALANCE SHEET, JUNE 30, 1917, COMPARED WITH JUNE 30, 1916.

ASSETS.				LIABILITIES.			
	JUNE 30, 1917.	JUNE 30, 1916.	INCREASE OR DECREASE.		JUNE 30, 1917.	JUNE 30, 1916.	INCREASE OR DECREASE.
INVESTMENTS:				CAPITAL STOCK:			
Investment in Road.....	\$336,271,268.36	\$329,388,356.42	\$6,882,911.94	Common	\$120,000,000.00	\$120,000,000.00	.....
Investment in Equipment.....	71,416,883.35	65,518,515.58	5,898,367.77	Preferred	60,000,000.00	60,000,000.00	.....
Total Investment in Road and Equipment.....	\$407,688,151.71	\$394,906,872.00	\$12,781,279.71	Total Southern Railway Company Stock.....	\$180,000,000.00	\$180,000,000.00	.....
Cash Deposited in Lieu of Mortgaged Property Sold	\$23,341.00	.....	\$23,341.00	Southern Ry.-Mobile & Ohio Stock Trust Certificates.....	5,650,200.00	5,650,200.00	.....
Physical Property—Rails and Fixtures leased to others	607,979.51	\$524,304.70	83,674.81	Total Stock	\$185,650,200.00	\$185,650,200.00	.....
INVESTMENTS IN AFFILIATED COMPANIES:				LONG TERM DEBT:			
Stocks	\$33,364,993.80	\$26,736,304.49	\$6,628,689.31	Funded Debt (Table 5)....	\$235,391,500.00	\$226,850,500.00	\$8,541,000.00
Bonds	28,062,459.04	28,021,459.04	41,000.00	Equipment Trust Obligations (Table 6).....	19,494,000.00	17,435,000.00	2,059,000.00
Notes	1,852,822.60	2,237,573.57	—384,750.97	Total Long Term Debt.....	\$254,885,500.00	\$244,285,500.00	\$10,600,000.00
Advances	2,366,587.35	1,999,719.29	366,868.06	Total Capital Liabilities	\$440,535,700.00	\$429,935,700.00	\$10,600,000.00
Miscellaneous (Matured interest coupons).....	43,925.00	51,455.00	—7,530.00	GOVERNMENTAL GRANTS:			
Total Investments in Affiliated Companies.....	\$65,690,787.79	\$59,046,511.39	\$6,644,276.40	Grants since July 1, 1914, in aid of Construction..	\$69,269.72	\$31,668.16	\$37,601.56
OTHER INVESTMENTS:				CURRENT LIABILITIES:			
Stocks	\$298,171.00	\$1,695,693.58	—\$1,397,522.58	Loans and Bills Payable..	\$455,000.00	\$455,000.00	.....
Bonds	5,264,346.78	5,169,380.03	94,966.75	Traffic and Car Service Balances	2,206,751.24	1,580,388.41	\$626,362.83
Notes	525,383.42	63,909.42	461,474.00	Audited Accounts and Wages	8,330,798.98	6,150,180.05	2,180,618.93
Advances for purchase of Additional Equipment.....	6,001,882.75	5,633,029.65	368,853.10	Miscellaneous Accounts ..	924,493.69	719,561.36	204,932.33
Total Other Investments	\$12,089,783.95	\$12,562,012.68	—\$472,228.73	Interest Matured, Including interest due July 1.....	2,875,317.65	2,818,680.65	56,637.00
Total Investments.....	\$486,100,043.96	\$467,039,700.77	\$19,060,343.19	Funded Debt Matured—Unpaid	24,673.80	40,773.80	—16,100.00
CURRENT ASSETS:				Dividends Accrued—Unmatured	56,502.00	56,502.00	.....
Cash	\$7,553,094.36	\$7,127,172.20	\$425,922.16	Interest Accrued—Unmatured	1,686,818.18	1,572,760.05	114,058.13
Time Deposit	1,964,069.84	1,906,448.05	57,621.79	Rents Accrued—Unmatured ..	309,475.66	203,404.12	106,071.54
Special Deposits	3,079,036.45	3,028,298.45	50,738.00	Expenses Accrued not vouchered	758,817.72	647,908.80	110,908.92
Loans and Bills Receivable ..	1,146,349.90	570,260.54	576,089.36	Other Current Liabilities.....	1,700,200.49	1,470,638.10	229,562.39
Traffic and Car Service Balances Receivable	1,933,010.32	1,298,226.89	634,783.43	Total Current Liabilities	\$19,328,849.41	\$15,715,797.34	\$3,613,052.07
Balances due from Agents and Conductors	807,434.12	145,419.51	662,014.61	DEFERRED LIABILITIES:			
Miscellaneous Accounts Receivable	6,841,939.81	4,533,206.69	2,308,733.12	Deferred Payments Account Reconstruction Rogersville Branch; Contractors' Per Cents. Retained and Sundry Items	\$917,029.96	\$633,341.60	\$283,688.36
Material and Supplies (Table 12)	9,309,593.02	6,813,172.27	2,496,420.75	UNADJUSTED CREDITS:			
Interest and Dividends Receivable	577,558.16	667,411.94	—89,853.78	Taxes	\$1,539,079.49	\$1,051,619.99	\$487,459.50
Other Current Assets.....	527,130.80	276,625.18	250,505.62	Insurance Reserve	1,078,561.12	1,133,469.42	—54,908.30
Total Current Assets.....	\$33,739,216.78	\$26,366,241.72	\$7,372,975.06	Operating Reserves	3,867,659.33	3,289,779.83	577,879.50
DEFERRED ASSETS:				Car and Ticket Mileage Suspense	960,642.04	700,219.12	260,422.92
Working Funds Advanced to Agents and Officers.....	\$392,251.68	\$241,776.27	\$150,475.41	Depreciation accrued on: Rail Leased to Other Companies	87,141.56	81,819.37	5,322.19
Liberty Bonds—Subscribed for employees	256,500.00	.....	256,500.00	Equipment Owned	16,241,089.25	15,472,168.77	768,920.48
Cash and Securities in Insurance Fund	1,078,561.12	1,133,469.42	—54,908.30	Equipment Leased from Other Companies	319,394.78	244,196.99	75,197.79
Other Deferred Assets.....	152,594.25	183,992.19	—31,397.94	Sundry Items	615,360.66	559,276.05	56,084.61
Total Deferred Assets	\$1,879,907.05	\$1,559,237.88	\$320,669.17	Total Unadjusted Credits	\$24,708,928.23	\$22,532,549.54	\$2,176,378.69
UNADJUSTED DEBITS:				CORPORATE SURPLUS:			
Insurance Premiums and Rents paid in advance..	\$26,029.87	\$13,243.96	\$12,785.91	Additions to Property, since June 30, 1907, through Income and Surplus	\$1,120,288.71	\$790,020.62	\$330,268.09
Unextinguished Discount on Funded Debt (Proportion chargeable to Additions and Betterments to be made)	182,434.60	120,655.96	61,778.64	Reserve for 2½% Dividend on Preferred Stock	1,500,000.00	.....	1,500,000.00
Additions and Betterments Expenditures; Freight Claims; Foreign Mileage and Sundry Items in Suspense	3,318,187.26	2,848,803.56	469,383.70	Miscellaneous	504.28	60,211.81	—59,707.53
Total Unadjusted Debits	\$3,526,651.73	\$2,982,703.48	\$543,948.25	Total Appropriated Surplus	\$2,620,792.99	\$850,232.43	\$1,770,560.56
Securities of the Company held by it:				PROFIT AND LOSS—Balance	37,065,249.21	28,248,594.78	8,816,654.43
1917. 1916.				GRAND TOTALS			
Unpledged \$5,095,200 \$13,403,200					\$525,245,819.52	\$497,947,883.85	\$27,297,935.67
Pledged .. 44,250,000 25,267,000							
Totals. \$49,345,200 \$38,670,200							
GRAND TOTALS	\$525,245,819.52	\$497,947,883.85	\$27,297,935.67				

[Adv.]

Railway Officers

Executive, Financial, Legal and Accounting

W. C. Mitchell has been appointed vice-president of the Susquehanna & New York, with office at New York.

W. E. Welch, superintendent of the Ft. Smith & Western, has been appointed assistant to the receiver, with office at Ft. Smith Ark.

J. D. Watson, assistant to the first vice-president of the St. Louis Southwestern, has been appointed assistant to the president, with office at St. Louis, Mo.

J. T. Freeman has been appointed auditor and general freight and passenger agent of the Brownwood North & South, with office at Brownwood, Tex., succeeding H. M. Grizzard.

M. K. Stephens, in addition to his duties as auditor of the Anthony & Northern, has assumed the position of traffic manager, in place of R. H. Singleton, with office at Hutchinson, Kan.

J. M. C. Usher has been appointed auditor and treasurer of the Sapulpa & Oil Field, with office at Tulsa, Okla., succeeding T. D. Trickey, auditor, and R. S. Homsher, treasurer and traffic manager.

F. W. Charske, auditor of freight accounts of the Union Pacific at Omaha, Neb., has been appointed auditor of the Oregon Short Line to succeed L. R. Wood, who is assigned to other duties with the system.

L. R. Smith has been appointed auditor of station accounts of the Great Northern, and H. F. Bayer, auditor of miscellaneous accounts, with headquarters at St. Paul, Minn., succeeding A. B. Fisher, promoted.

E. B. Barber, treasurer of the Algona Central & Hudson Bay at Sault Ste. Marie, Ont., has been appointed controller, and J. M. Alton has been appointed treasurer. Both with offices at Sault Ste. Marie, Ont.

F. B. Longfield, chief clerk of freight receipts of the Chicago Great Western, has been appointed auditor of freight receipts, with headquarters at Chicago, Ill., to succeed W. J. Cunningham, resigned to become general accountant on the Illinois Central at Chicago.

William E. Lamers has been appointed assistant auditor of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, succeeding James E. Baldwin, resigned. H. S. Lewis, commercial agent at Toledo, Ohio, has been appointed district freight agent at the same place. J. B. Fletcher succeeds Mr. Lewis.

Operating

G. S. Whybark, chief dispatcher, has been appointed superintendent of the Arkansas Central, with office at Ft. Smith, Ark.

R. B. Croll, superintendent of car service of the Ft. Smith & Western, has been appointed superintendent in charge of car service, train and station service, with headquarters at Ft. Smith, Ark.

R. McIntyre has been appointed assistant to the vice-president and general manager of the Southern Pacific, Pacific System, in charge of wage schedules, with headquarters at San Francisco, Cal.

H. S. Baumgardner has been appointed superintendent of transportation of the Missouri & North Arkansas, with jurisdiction over train operation and station service, with headquarters at Harrison, Ark.

J. W. Daniels has been appointed superintendent of the Arkansas division of the Missouri Pacific, with headquarters at Little Rock, Ark., succeeding C. L. Mayne, assigned to other duties; effective October 10.

C. E. Hair, assistant secretary of the Chicago, Terre Haute & Southeastern, has been appointed assistant general superintendent, with headquarters at Terre Haute, Ind., and C. V. Link has been appointed assistant superintendent at Bedford, Ind.

L. S. Brown, assistant general superintendent of the eastern lines of the Canadian Government Railways, has been appointed general superintendent of the eastern lines with office at Moncton, N. B., vice J. K. McNeillie, resigned to go to another company.

H. B. Voorhees, who has been appointed general superintendent of transportation of the Baltimore & Ohio, with headquarters at Baltimore, Md., as has already been announced in these columns,



H. B. Voorhees

was born on January 22, 1876, and graduated as a civil engineer from Rensselaer Polytechnic Institute at Troy, N. Y., in 1896. He began railway work in the same year as assistant supervisor of the Philadelphia & Reading at Tamaqua, Pa., and on March 1, 1898, became supervisor. On August 1, 1898, he was promoted to assistant trainmaster, and in October, 1900, became trainmaster. He entered the service of the Baltimore & Ohio on December 1, 1901, as assistant engineer at Pittsburgh, and in August, 1902, was promoted to division engineer, with headquarters at Baltimore. He was appointed assistant to general superintendent in September, 1903, and subsequently served as superintendent and general agent of the Philadelphia division at Philadelphia, Pa., until May, 1910, when he was appointed assistant to president. On May 1, 1912, he was appointed general superintendent of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton lines, at Cincinnati, Ohio; he later served as general superintendent of the Northwestern district of the Baltimore & Ohio, and now becomes general superintendent of transportation of the Baltimore & Ohio, with office at Baltimore, Md., as noted above.

F. M. Clark, whose appointment as superintendent of the Old Colony division of the New York, New Haven & Hartford, with headquarters at Taunton, Mass., has already been announced in



F. M. Clark

these columns, was born in Taunton, and was educated in the public and high schools. He later studied mechanical drafting in the night schools. He entered the service of the Old Colony Railroad in 1891, as agent and operator and remained in the service of that road until it was absorbed by the New York, New Haven & Hartford in June, 1893, since which time he has been continuously in the service of the New Haven. He served consecutively as agent and operator, car distributor and train dispatcher until April, 1906, when he was appointed transportation clerk in the office of the assistant general superintendent at Boston, Mass., and later was appointed inspector of transportation in the office of the general superintendent at New Haven. On June 1, 1909, he was appointed acting trainmaster of the Shore Line division; the following November he was appointed trainmaster of the Providence division, remaining in that position until June, 1916, when he was appointed assistant superintendent of transportation with supervision of freight rates, and now becomes superintendent of the Old Colony division as above noted.

C. N. Clark, assistant superintendent of the Denver & Salt Lake at Denver, Colo., having been assigned to other duties, the position is abolished. F. B. Miller has been appointed trainmaster at Denver and will handle all matters heretofore under the jurisdiction of the assistant superintendent.

R. S. Marshall, superintendent of the Georgia division of the Seaboard Air Line at Atlanta, Ga., has been appointed superintendent of the Virginia division, with office at Raleigh, N. C., vice G. R. Carlton, who succeeds Mr. Marshall as superintendent of the Georgia division, with office at Atlanta.

H. B. Titcomb, maintenance of way assistant for the northern district to the assistant chief engineer of the Southern Pacific at San Francisco, Cal., has been appointed superintendent of the Stockton division, with headquarters at Stockton, Cal., succeeding C. H. Ketcham, resigned, effective October 15.

Claude B. Carpenter was appointed superintendent of the Rio Grande Southern division of the Denver & Rio Grande on October 1, succeeding F. White, acting superintendent, assigned to other duties. Mr.

Carpenter was born at Columbia, S. C., on January 11, 1874, and entered the service of the Denver & New Orleans on May 1, 1885, as an office boy in the superintendent's office at Denver, Colo. In September, 1887, he went to the Denver & Rio Grande as office boy in the general passenger agent's office at Denver, and in June, 1890, was transferred to the office of president and general manager as record clerk. On January 1, 1892, he was made record clerk in the general superintendent's office, and was subsequently stenographer, telegraph operator, transportation clerk and private secretary in the same office until 1901, when he became chief clerk. He was appointed chief clerk to the general superintendent of the Colorado & Southern at Denver, on January 19, 1903, and on August 1 of that year became chief clerk to the general manager of the Ft. Worth & Denver City, at Ft. Worth, Tex., also acting as purchasing agent. In May, 1904, he was appointed chief clerk to the superintendent of the northern division of the Colorado & Southern at Denver, and returned to the Denver & Rio Grande in May, 1906, as chief clerk to the general superintendent at Denver. From June 1, 1907, to August 1, 1913, he was chief clerk to the general manager, acting also as superintendent of car service for three years. He was appointed inspector of transportation on the latter date, and on May 1, 1914, became assistant superintendent of the fourth division, from which position he has been promoted to that of superintendent of the Rio Grande Southern division, with headquarters at Ridgway, Colo.

R. C. Andrews, superintendent of the Ft. Worth division of the Texas & Pacific at Ft. Worth, Tex., has been transferred to Marshall, Tex., as superintendent of the eastern division, succeeding W. M. Lynch. Mr. Lynch has been transferred to the Louisiana division as superintendent, with headquarters at Alexandria, La., succeeding W. H. DeFrance, who succeeds Mr. Andrews at Ft. Worth.

A. J. Witchell, engineer of tests of the Spokane, Portland & Seattle, has been appointed to the newly created position of assistant to the general superintendent, with office at Portland, Ore. G. E. Votaw, superintendent of the Great Northern, at Great Falls, Mont., has been appointed superintendent of the Portland division of the Spokane, Portland & Seattle, succeeding C. A. Vermillion, granted a leave of absence on account of ill health.

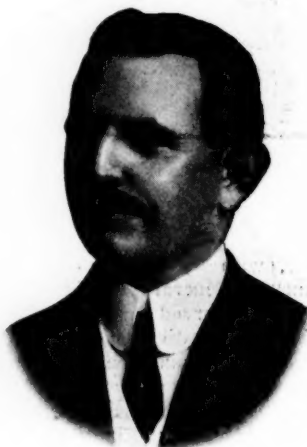
R. E. Ryan, assistant superintendent of the Minneapolis & St. Louis at Watertown, S. D., has been appointed superintendent of the central and western divisions, with office at Minneapolis, Minn., succeeding C. P. Stembel, resigned to become general

superintendent of the Virginian at Norfolk, Va. The position of assistant superintendent at Watertown has been abolished. H. McCarthy, trainmaster at Minneapolis, has been appointed assistant superintendent of the central and western divisions. F. O. Coleman has been appointed trainmaster of the western division at Watertown. The office of trainmaster of the central division at Minneapolis has been abolished.

J. W. Mulhern, formerly superintendent of the Northern division of the Chicago Great Western, has been appointed general superintendent of the Kettle Valley, a subsidiary of the Canadian Pacific, with headquarters at Penticton, B. C. Mr. Mulhern was born at Naples, Ill., in 1863, and entered railway service with the Chicago, Burlington & Quincy at Beardstown, Ill., in 1881, serving successively as water carrier, track hand, freight trucker, freight clerk, brakeman and freight and passenger conductor until October, 1887, when he was made yardmaster of the Kansas City terminal. From January, 1890, to December, 1902, he was trainmaster at Brookfield, Mo., and on the latter date was promoted to superintendent of terminal at Kansas City, Mo. In August, 1904, he was appointed superintendent of the Hannibal-St. Louis division at Hannibal, Mo., and in December of the following year was transferred to the superintendency of the Galesburg division at Galesburg, Ill., resigning in July, 1908, to become superintendent of the Illinois lines of the Chicago & Alton at Bloomington, Ill. From May, 1910, to May, 1911, he was assistant to the second vice-president of the Western Pacific at San Francisco, Cal., and from the latter date to August, 1912, was general superintendent of the Utah lines of the Denver & Rio Grande at Salt Lake City. In November, 1912, Mr. Mulhern was appointed superintendent of the Chicago-Petoskey division of the Pere Marquette at Grand Rapids, Mich., and in July, 1914, he went to the Chicago Great Western as superintendent of the Northern division at St. Paul, Minn., which position he held until March, 1917. His appointment as general superintendent of the Kettle Valley was made on July 1.



J. W. Mulhern



C. B. Carpenter

Traffic

Robert J. Sefton has been appointed district passenger agent of the Chicago Great Western at St. Louis, Mo., in place of H. B. Bryning.

G. H. Dougherty, traveling freight agent of the Kansas City Southern at Dallas, Tex., has been appointed general agent, with office at Tulsa, Okla.

W. A. Kellond, general baggage agent of the Missouri, Kansas & Texas, has also assumed the duties of manager of mail traffic, with office at Parsons, Kan.

John D. Deets, superintendent of farming and development of the Minneapolis & St. Louis, has been appointed immigration agent at Minneapolis, Minn.

A. C. Huggins has been appointed commercial agent of the Cleveland, Cincinnati, Chicago & St. Louis at Jacksonville, Fla., succeeding R. G. Parks, resigned.

W. G. Holly has been appointed commercial agent of the Macon, Dublin & Savannah, with headquarters at Atlanta, Ga., vice E. G. Tucker, assigned to other duties.

W. R. Daniels, traveling freight agent of the Texas & Pacific at Dallas, Tex., has been appointed division freight agent at El Paso, Tex., in place of D. L. Ray. R. S. Norton has been appointed commercial agent at San Francisco, Cal., succeeding W. J. Moylan, resigned.

J. M. Gross, assistant general freight agent of the Pennsylvania Railroad, lines east of Pittsburgh, with headquarters at Philadelphia, Pa., has resigned to become general traffic manager of the Bethlehem Steel Company; F. X. Quinn, district freight solicitor of the Pennsylvania Railroad at New York City, has been appointed acting division freight agent at Buffalo, effective October 15.

J. B. Large, division freight agent of the Pennsylvania Railroad, at Buffalo, N. Y., has been appointed assistant general freight agent of the lines East of Pittsburgh, with headquarters at Philadelphia, Pa. He was born on August 18, 1882, at Philadelphia, and was educated at the Protestant Episcopal Academy, of Philadelphia, and at the Wharton School of Finance of the University of Pennsylvania. He entered the service of the Pennsylvania Railroad on October 7, 1902, as a clerk at Germantown Junction, Pa., and the following summer was transferred to the general office at Philadelphia. In May, 1906, he was promoted to traveling freight solicitor, of the Boston district and in October, 1907, was made district



J. B. Large

freight solicitor at Providence, R. I. He was promoted in February, 1910, to freight solicitor at Reading, Pa., and on May 8, 1912, upon a change in organization of the Pennsylvania Railroad, he was appointed division freight agent of the Erie and Northern divisions with headquarters at Erie, and later served in the same capacity at Buffalo, N. Y., until his appointment as assistant general freight agent, as above noted.

Horace Hale Holcomb, general freight agent of the Chicago, Burlington & Quincy, lines west of the Missouri river, with headquarters at Omaha, Neb., has been promoted to assistant freight traffic manager at Chicago, succeeding C. E. Spens, recently elected vice-president in charge of traffic. Mr. Holcomb was born on October 12, 1865, and entered the service of the Burlington on August 1, 1889, as a clerk in the local freight office at Chicago. In March of the following year he was transferred to the Hawthorne (Ill.) yards as rate clerk, and in May, 1891, was made chief clerk at that point. In November, 1900, he was transferred to the general freight office as tariff clerk, and on January 1, 1902, became



H. H. Holcomb

chief clerk to the assistant general freight agent at St. Paul, Minn. On March 1 of that year he was made chief clerk to the assistant general freight agent at Chicago, and on August 24, 1905, he was promoted to assistant to the freight traffic manager, which position he held until December, 1912, when he was appointed general freight agent, lines west of the Missouri river, with headquarters at Omaha. He remained in the latter position until his promotion to assistant freight traffic manager on October 1.

C. C. McMillin, assistant general passenger agent of the Georgia Railroad at Atlanta, Ga., has been appointed special pas-

senger agent, with office at Augusta, and J. M. Wooddall has been appointed assistant general passenger agent with office at Atlanta, succeeding Mr. McMillin. Mr. Wooddall has been appointed assistant general passenger agent also of the Atlanta & West Point and the Western Railway of Alabama.

F. B. Rowley, commercial agent of the New York Central Railroad and the New York Central Fast Freight Lines at Minneapolis, Minn., has been promoted to assistant general freight agent of the New York Central Railroad at Chicago. A. L. Evans succeeds Mr. Rowley at Minneapolis and A. C. Lawson has been appointed commercial agent at Salt Lake City, Utah, vice W. L. Greiner, promoted to westbound agent of the Merchants Despatch at Chicago.

James Paul Anderson, who has been appointed passenger traffic manager of the Pennsylvania Lines East of Pittsburgh and Erie, with office at Philadelphia, Pa., as has already been announced in these columns, was born August 29, 1862, at Beaver, Pa. He was educated in the public schools of Beaver and Allegheny and entered the service of the Allegheny Valley Railway on July 15, 1880, as a clerk in the passenger department. After serving as chief clerk and traveling passenger agent he was appointed general passenger agent of the same road in June, 1889, and when the Pennsylvania Railroad absorbed the Allegheny Valley in August, 1900, he was appointed division ticket agent of the Buffalo and Allegheny



J. P. Anderson

Valley division. On April 1, 1910, he was appointed district passenger agent of the Pittsburgh district, and on August 1, 1912, was promoted to assistant general passenger agent. In March, 1913, the passenger department of the Pennsylvania Lines East of Pittsburgh and Erie was reorganized and Mr. Anderson was promoted to general passenger agent in charge of through traffic, with headquarters at Philadelphia, Pa., which position he held until his appointment as passenger traffic manager, as above noted.

C. E. Veatch, assistant general freight and passenger agent of the Missouri & North Arkansas, has been appointed acting general freight and passenger agent, with office at Harrison, Ark., to succeed J. C. Murray, granted a leave of absence to enter an officers' training camp. W. L. Monson, commercial agent at Atlanta, Ga., has been transferred to Chattanooga, Tenn., succeeding A. A. Boyle, resigned. G. C. Murray has been appointed commercial agent at Atlanta, succeeding Mr. Monson. C. A. Morgan has been appointed commercial agent at Wichita, Kan., succeeding L. C. Williams, resigned, and E. J. Graham becomes commercial agent at New Orleans, taking the place of W. J. McMahon, resigned.

Engineering and Rolling Stock

F. W. Schultz has been appointed master mechanic of the Kansas City, Mexico & Orient of Texas at San Angelo, Tex., vice T. C. Kyle.

C. Whitfield, roadmaster of the Portland division of the Spokane, Portland & Seattle, has been appointed superintendent maintenance of way, with headquarters at Portland, Ore., the title of roadmaster having been abolished.

M. B. McPartland has been appointed master mechanic of the Denver & Salt Lake, with jurisdiction over the motive power and car departments, with headquarters at Utah Junction, Denver, Colo. D. G. Cunningham having resigned, the position of superintendent of machinery is abolished.

E. W. Smith, assistant engineer of motive power of the Pennsylvania Railroad at Altoona, Pa., has been appointed

master mechanic, with office at Harrisburg, succeeding C. L. McIlvaine, promoted, and C. O. Keagy, general foreman of the West Philadelphia shops, has been appointed master mechanic of the Middle division of the main line, with office at Altoona.

Charles Lee McIlvaine, master mechanic of the Philadelphia division of the Pennsylvania Railroad at Harrisburg, Pa., has been appointed superintendent of motive power of the Northern division, with headquarters at Buffalo, N. Y.

Claude M. Starke, master mechanic of the Illinois Central at McComb, Miss., has been appointed assistant superintendent of motive power of the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., effective October 1. Mr. Starke was born at Water Valley, Miss., on January 15, 1878, and entered the service of the Illinois Central on April 9, 1891, as a clerk at Water Valley. He was subsequently machinist apprentice, machinist and roundhouse foreman, and was promoted to general foreman at Indianapolis, Ind., on April 1, 1909, being transferred to Champaign, Ill., in a similar capacity on September 1, 1911. He was appointed master mechanic at Water Valley on June 1, 1912, and one year later was transferred to McComb. He held the latter position until his recent appointment as assistant superintendent of motive power of the Missouri, Kansas & Texas.



C. M. Starke

Francis M. Waring, acting engineer of tests of the Pennsylvania Railroad at Altoona, Pa., has been appointed engineer of tests. He was born on September 28, 1879, at Charleston, S. C., and is a graduate of the Charleston High School and Virginia Polytechnic Institute. He began railway work with the Northern Central at Baltimore, Md., on November 14, 1898. On March 5, 1900, he entered the service of the Pennsylvania Railroad, on special duty at Williamsport, Pa., and in November of the following year he was transferred to Baltimore on special duty and subsequently served there as a machinist until July, 1902, when he again returned to Williamsport to be assigned to special work. In November, 1902, he became a draftsman there, and on October 19, 1903, was made an inspector at Altoona. He entered the test department in September, 1912, as foreman of the physical laboratory, and from June 1, 1917, until he received his recent appointment, he has been acting engineer of tests.



F. M. Waring

Chas. Manley has been appointed superintendent of machinery of the Missouri & North Arkansas, with jurisdiction over all mechanical and car departments with office at Harrison, Ark., and the position of superintendent, formerly held by him, has been abolished. H. J. Armstrong, resident engineer, has been appointed engineer maintenance of way, with jurisdiction over maintenance of way, structures and water service, with office at Harrison.

O. C. Wright, assistant engineer of motive power of the Pennsylvania Lines West, at Pittsburgh, Pa., has been appointed master mechanic on the Southwest system at Logansport, Ind. E. B. De Vilbiss, assistant engineer of motive power at Toledo, Ohio, has been transferred to the general office at Pittsburgh, Pa., taking Mr. Wright's place.

Edward Lawless, general foreman locomotive department of the Illinois Central at Freeport, Ill., has been promoted to master mechanic with the same headquarters, succeeding V. U. Powell, transferred to the Burnside shops, Chicago. E. C. Roddie, district foreman at New Orleans, La., has been promoted to master mechanic at McComb, Miss., to succeed C. M. Starke, resigned to become assistant superintendent of motive power of the Missouri, Kansas & Texas at Parsons, Kan.

John M. Henry, assistant superintendent of the New York division of the Pennsylvania Railroad at Jersey City, N. J., has been appointed assistant general superintendent of motive power of the lines east of Pittsburgh with headquarters at Altoona, Pa. He was born on October 10, 1873, and was educated in the public schools of Altoona and graduated from Purdue University in June, 1900. He entered the service of the Pennsylvania Railroad as a special apprentice in the Altoona machine shops on May 5, 1889. He served as an apprentice until September 1, 1896, when he entered Purdue University, being furloughed from the shops during the school term each year. In June, 1900, he became a special apprentice in the office of the assistant engineer of motive power at Altoona; on July 1, 1901, he was promoted to motive power inspector at Altoona, and in February, 1902, was made assistant engineer of motive power of the Erie division and Northern Central Railway at Williamsport, Pa. He was promoted to master mechanic of the Elmira, N. Y., shops on July 1, 1903, and later served in the same capacity first at the Sunbury shops and then at the Olean shops, and at the West Philadelphia shops. On December 1, 1913, he was promoted to superintendent of motive power of the Western Pennsylvania division, at Pittsburgh, Pa., and on May 1, 1916, was appointed assistant superintendent of the Pittsburgh division. He was transferred as assistant superintendent to the New York division on April 15, 1917, and now becomes assistant general superintendent of motive power at Altoona, as above noted.



J. M. Henry

Purchasing

Robert E. Scott, assistant roadmaster of the Oregon Electric, has been appointed purchasing agent of the Spokane, Portland & Seattle, with headquarters at Portland, Ore.

Railway Officers in Military Service

J. C. Murray, general freight and passenger agent of the Missouri & North Arkansas, with headquarters at Harrison, Ark., has been granted a leave of absence to enter an officers' training camp.

OBITUARY

John H. Hale, for several years past a member of the Connecticut Public Utilities Commission, died at his home in Glastonbury, Conn., on October 12, at the age of 64. Mr. Hale was a noted horticulturist and grower of peaches.

Charles Harrison Tweed, formerly general counsel for the Central Pacific and the Chesapeake & Ohio, also general counsel of the Southern Pacific when that company was organized, died at his home in New York, on October 11, at the age of 83.